# A STUDY TO ASSESS THE EFFECTIVENESS OF FOOT CARE INSTRUCTION ON KNOWLEDGE AND PRACTICE AMONG DIABETIC PATIENTS IN A SELECTED COMMUNITY AT KANYAKUMARI DISTRICT, TAMIL NADU.

**M.Sc (NURSING) DEGREE EXAMINATION**

**BRANCH I – MEDICAL SURGICAL NURSING**

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**THE TAMILNADU DR. M.G.R. MEDICAL UNIVERSITY**

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# CERTIFICATE

This is to certify that the dissertation **"A Study To Assess The Effectiveness Of Foot Care Instruction On Knowledge And Practice Among Diabetic Patients In A Selected Community At Kanyakumarai District. Tamilnadu"** is the bonafide work done by **Mr.V.Anilvince,** R.V.S College of Nursing, R.V.S Educational Trust, Sulur, Coimbatore, submitted to The Tamil Nadu Dr.M.G.R Medical University, Chennai-32, in partial fulfillment of the requirement for the award of the degree of M.Sc (Nursing) Branch I –Medical Surgical Nursing under our guidance and supervision during the academic period from 2013-2015.

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## ABSTRACT

A Study To Assess The Effectiveness Of Foot Care Instruction On Knowledge And Practice Among Patients With Diabetes Mellitus In A Selected Community At Kanyakumarai District.

The aim of the study was to determine whether the foot care instruction make significant any difference in the mean score of knowledge and practice of foot care among Diabetic patients.

The conceptual frame work used in this study was based on modified Titler effectiveness model (2004). A Quasi experimental pre and post test control group design was used to determine the effect of foot care instruction on knowledge and practice of foot ulcer among adults with Type 2 Diabetes Mellitus. The sample of 60 diabetic subjects were selected by Purposive sampling method. Samples were assigned to control and the experimental group 30 in each. The data from the samples were collected by using a structured interview schedule and rating scale. The data was analyzed using descriptive and inferential statistics.

A pretest was given to both experimental and control group. A small group teaching with video demonstration on foot care was given to the experimental group after the pre-test. Post test was conducted on the $15^{th}$ and $30^{th}$day for experimental group and control group.

The knowledge was assessed in different areas like knowledge on Diabetes, Diabetic management, foot care, and foot risk assessment. In the experimental group significant mean score difference was seen between pre-intervention and post-intervention knowledge status. Significant difference is seen in all the areas of knowledge like basic diabetic knowledge (t= $15^{th}$ day- 8.76, $30^{th}$ day- 10.44 df=58 $P < 0.05$), diabetic management (t= $15^{th}$ day- 9.55, $30^{th}$ day- 11.77 df=58 $P < 0.05$, foot care (t= $15^{th}$ day- 10.68, $30^{th}$ day- 10.99 df=58 $P < 0.05$),and foot risk assessment (t= $15^{th}$ day- 12.24, $30^{th}$ day- 13.99 df=58 $P < 0.05$).

The level of practice was studied on different aspects of foot care like foot care practice and Foot wear practice. In practice significant mean score difference was seen with experimental group after intervention in the aspects of foot care (t= $15^{th}$ day- 31.84, $30^{th}$ day- 30.48 df=58 $P < 0.05$) and foot wear practice (t= $15^{th}$ day-29.91, $30^{th}$ day- 32.31 df=58 $P < 0.05$).

The study concluded that the foot care instruction had an effect on adults with type 2 Diabetes Mellitus. It improved their knowledge and level of practice regarding foot care.

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# INTRODUCTION

# CHAPTER -I

# 1.INTRODUCTION

## 1.1 BACKROUND OF THE STUDY

**Put Feet First - Prevent Amputation**

(World diabetes day theme 2005)

According to WHO "Health is a state of complete physical, mental and social well being and not merely an absence of disease or infirmity". Health is one hand highly personal responsibility and on the other hand a major public concern. Although health is now recognized as a fundamental human right. It is essentially an individual responsibility.

The history of Diabetes Mellitus started with Egyptians by 1550 BC. The term "Diabetes Mellitus" is derived from a Greek word which means 'to go through' or a 'Siphon' In the 2nd century A.D the condition ' Diabetes' was named by the Greek physician, Aretaeus of Cappadocia Later, the word "mellitus' was added by Thomas Willis in 1675 after rediscovering the sweetness of urine and blood of patients (first noticed by the ancient Indians) (**Ahmed AM, 2002**).

Diabetes Mellitus is a chronic metabolic disease characterized by constant thirst (polydipsia), excessive urination (polyuria), loss of weight and elevated levels of blood glucose (hyperglycemia) due to the defects in insulin secretion, action or both.

Diabetes mellitus is a silent disease and is now recognized as one of the fastest growing threats to public health in almost all countries of the world. It is also called the" disease of prosperity".

Alarmingly India tops the chart of countries with the largest number of diabetics. Based on the IDF Diabetics atlas 2012 it is estimated that worldwide 366 million people are diabetics and is also expected to rise to 552 million by 2030. Most of these people with diabetes live in low- and middle-income countries, and these countries will also see the greatest increase over the next 19 years **(IDF Diabetes Atlas, 6th 2013).** .

In terms of ranking of countries for Type 2 Diabetes Mellitus prevalence, Ukraine (3.2 million)is at the bottom of the list, Pakistan (5.2 million) comes at number six, China is second with 20.8million people and India has the highest number (31.7 million) of people with the rate of 3% for Type 2 Diabetes Mellitus. The Pima Indians of Arizona in the United States (US) have the highest prevalence rates (21%) of Type 2 Diabetes Mellitus **(King et al. 2006),** 35 millions are Indians the highest number in any country. Every fifth person who suffers from diabetes in the world today is an Indian. No wonder India is the "Diabetic capital of the world".

In U.S 29.1 million people or 9.3% of the population have Diabetes. Out this 21.0 million are diagnosed and 8.1 million undiagnosed. In 2010 of about 73,000 non-traumatic lower-limb amputations were performed in adults aged 20 years or older with diagnosed diabetes. About 60% of non-traumatic lower-limb amputations among people aged 20 years or older occur in people with diagnosed diabetes. **U.S. Department of Health and Human Services; 2014**.

WHO estimated that every fifth diabetic is an Indian more than one million people with diabetes mellitus lose a leg every year as a consequence of their condition. 40,000 leg are amputated every year. India, the second most populous country of the world, has been severely affected by the global diabetes epidemic. As per the International Diabetes Federation (2013), approximately 50% of all people with diabetes live in just three countries: China (98.4 million), India (65.1 million) and the USA (24.4 million). There is clear evidence to show that diabetes prevalence is rapidly increasing, especially in urban India While comprehensive data are not available, smaller studies have been performed in various states of India to study the prevalence of diabetes. Based on these studies, the highest prevalence reported is from Ernakulum in Kerala (19.5%) and the lowest from Kashmir valley (6.1%). Most other areas have prevalence above 10%. While most prevalence studies in India have been regional, there has been a recent effort Supported by the Indian Council of Medical Research to estimate the nationwide prevalence of diabetes (urban and rural) . The first phase of the ICMR-INDIAB study (involving 3 states and one Union Territory) has been completed. In this study around 13000 subjects were studied using a stratified multistage sampling design. The rural and urban populations were equally represented. The prevalence rates of diabetes and prediabetes were assessed by measurement of fasting and 2 hour post glucose load capillary blood glucose. This

study projects a likely national estimate of 62.4 million patients with diabetes and 77.2 million with prediabetes. Prevalence of diabetes was reported ranging from 5.3% to 13.6% in different areas in this study.

There is limited information on the incidence of diabetes in India. One such data source is the **New Delhi Birth Cohort** study, which reported an annual incidence of 1.0% for males and 0.5 % for females, even though this population was in the 4th decade of life.

In a longitudinal cohort from Chennai, the incidence of diabetes was calculated as 20.2 per 1000 among subjects with prior normal glucose tolerance, and 64.8 per 1000 in those with prediabetes. Among 20,000 Indians with type 2 diabetes who participated in the study, the prevalence of various complications were as follows: neuropathy (24.6%), cardiovascular (23.6%), renal (21.1%), eye (16.6%) and foot ulcer (5.1%). In the Improving Management Practices and Clinical Outcomes in Type 2 diabetes (IMPACT) study, out of 20,000 Indian patients with type 2 diabetes mellitus , 60% had coronary artery disease (CAD), 30 % had peripheral arterial disease, while neuropathy and retinopathy were present in 65.1 % and 38.3% subjects respectively (**Mohan diabetic foundation Chennai 2013**)

Diabetes as a chronic disease increases morbidity, mortality and decreases the quality of life. It requires continuing medical care, self monitoring and life style modifications (nutrition & exercise) to minimize the risk of complications and mortality.

The complications of diabetes includes acute and chronic complications. Diabetic ketoacidosis, Hyperosmolar hyperglycaemic syndrome and hypoglycaemia syndrome are acute complications. The chronic complications are categorized into macrovascular and microvascular complications. Macrovascular diseases include cerebrovascular, cardiovascular and peripheral vascular disease. The micro vascular complications are diabetic retinopathy, neuropathy, and nephropathy. It is observed that the most common cause of hospitalization among diabetics is the foot complications. The result from a combination of microvascular and macrovascular diseases that place the patient at risk for Foot injury or Foot ulcer and serious infection that may lead to amputation.

"Tend your feet as your face, lest you have to bury your feet, before your face"
"Prevention is better than cure and is less expensive"

The human foot is truly a mechanical Marvel it bears the brunt of the body weight. In course of lifetime, the average person walks 75,000 to 1,00,000 miles, so it is not surprising that the feet undergo stress. If a person with normal sensation feels discomfort in some part of the leg while walking, he'll compensate by changing the way his foot meets the ground, transferring. But for people with diabetes in whom sensation may be diminished, the ordinary act of walking is where many foot problems begin.

WHO report on the occasion of world diabetes day 2014 stated that amputation due to diabetes cause unnecessary loss of life and disability, WHO and the International Diabetes Federation (IDF) call attention to this problem and stated that more than half of these lower limb amputations could be prevented with adequate detection and care. Diabetic foot ulcers (DFUS) precede 85% of non-traumatic lower extremity amputations (LEAS). Approximately 3-4 percent of individuals with diabetes currently have foot ulcers or deep infections, 15 percent of foot ulcers develop during their lifetime.

- India has 30 million diabetics, the highest in the world.
- Five percent of Tamilnadu have diabetes (about 2.5 lakh) and about 30,000 -40,000 of these develop foot problems annually.
- Cost of treating each foot ulcer is about Rs.10, 000 and it takes 4-6 weeks to heal.
- Inadequately treated ulcers precede 85% of diabetic foot amputations.

According to hospital discharge records an estimated 54,000 amputations of lower extremity take place each year in diabetic patients. Clinical studies show that foot ulcers precede 85 percent of non-traumatic lower extremity take place each year in diabetic patients, 28 percent to 51 percent of these require a second amputation within 5 years. **Dr.Kwukich MD,2010**

More than 60 percent of non-traumatic lower limb amputations in the US occur among people with diabetes. Amputation rates are 1.4 to 2.7 percent times higher in men and women with diabetes. **American diabetic association,2011**

Based on United Kingdom population surveys, diabetes foot problems are common complications of diabetes with prevalence of 23% - 43% for neuropathy and 5-7% for foot ulceration.

So every diabetic person should be his own dietitian, nurse and doctor. In no other health problem the affected person needs to be informed and educated as much. Because, education of the patient is the keystone in the prevention of diabetic foot ulcer.

In the long run the diabetic patients are vulnerable and prone to foot ulcer keeping them informed about prevention of diabetic foot ulcer is important. This would definitely play a major role in reducing diabetic foot related amputations.

## 1.2NEED FOR THE STUDY

**“Best treatment is Prevention”**

International Diabetic Federation stated that diabetes is the third leading cause of death by disease. People with diabetes are prone to foot problems because it can cause damage to the blood vessel and nerves. This in turn, may result in decreased ability to sense trauma or pressure on the foot.

Foot injury may go unnoticed until severe infection develops. Diabetes also alters the immune system. Thus increasing the body’s ability to fight infection. Small infection can rapidly progress to death of the skin and other tissues (necrosis), which may require amputation, to the affected limb to save the patient’s life.

Every 30 seconds a leg is lost due to diabetes in the world and 70 percent of all leg amputations were done on people with diabetes somewhere in the world. According to the International Diabetes Federation (IDF) in an effort to, reduce the number of amputations among people with diabetes. Every year, four million people worldwide get a foot ulcer and one in every six people with diabetes develop a foot complication in their life time. People with diabetes are up to 40 times more likely to undergo lower leg amputation. In poor countries like India, treating diabetic foot may account for 40 percent of health resources.

World diabetes day campaign, conducted by the International Diabetes Federation, in the year 2005 jointly with WHO focuses on diabetes and foot care, encapsulated in the slogan

**“PUT FEET FIRST, PREVENT AMPUTATION”.**

Diabetes day focused on preventing lower limb amputations for people with diabetes through education and early identification.“Knowing what symptoms to look for and how to care for your feet at home are the first steps to prevent amputations. The key is recognizing a potential problem before it becomes a non healing foot wound or ulcer”.

According to (American Diabetic Association) 50 percent of these amputations are thought to be preventable, provided patients are taught foot care measures and practice them on a daily basis. Globally the rates of amputations range from a high of

43.9 per 100,000 per year among residents of Madrid to lowest range 38.3 per 100,000

UK calculation showed that 25% to 90% of all amputations were associated with diabetes, and that life time risk of foot ulcer in diabetics could be as high as 25%.It was estimated in 2001 that amputation cost was $10.9 billion in U.S & 252 million pounds in UK. In the developed countries 20% of the expenditure on diabetes can be attributed to the diabetic foot. An annual incidence of foot ulcers is 2-6% and prevalence of 3-8% with recurrence rates of 50-70% within 5 years. The studies suggest that the incidence of foot ulcers and amputations could be reduced by 25% to 40% with intensive prevention, which would save money in the long run.

In India 40% of all diabetic admissions to hospitals are due to foot problems. Diabetes can damage a person's blood vessels and nerves especially if their blood is sugar poorly controlled. Poor circulation and nerve damage in the feet makes people vulnerable to unnoticed cuts or other injuries and progress into poorly healing ulcer or sores. In severe cases this can lead to foot or leg amputation. **Dr. Srujal shah, 2014 surgeon** reported that diabetic foot ulcers are often a strong indicator of advanced diabetes .

Researchers from St. Georges University of London investigated how diabetic foot ulcers affected a person's risk of dying earlier. They found that those with a history of foot ulceration had a higher death rate than those without the foot ulcers.

**Dr.Ramesh 2012** stated that in India patients with Diabetic Foot Ulcer (DFU) have greater death risks as compared with patient without a history of DFU. In India most of the foot problems are associated with neuropathy and infective rather than vascular. It is also observed that in India 55% of foot ulcers are neuropathic (nerve involvement), 35% are neuroischemic and 10% are ischaemic blood vessels involvement. Up to 25% of patients with diabetes develop a foot ulcer. More than half of all foot ulcers become infected, requiring hospitalization and 20% of infections result in amputation. Diabetes contributes approximately 80% of all nontraumatic amputations performed every year. After a major amputation 50% of people will have another limb amputated in two years. People with a history of a diabetic foot ulcer have a 40% greater 10 year death rate than people with diabetes alone.

**Dr Abhijeet Joshi, 2007**, a diabetic foot surgeon, says when diabetes is not well controlled there is damage to the organs and the immune system is impaired. Foot problems occur in people with diabetes and can get serious very fast. Recent statistics shows that approximately a quarter of all people with diabetes worldwide at some point during their lifetime will develop sores or breaks (ulcers) in the skin of their feet,

**Dr Joshi.2010** Those with long standing diabetes are at the risk of developing diabetic neuropathy and complications of diabetic foot. Round-the-year foot care can ensure that the chances of complications are minimized.

A diabetic should take special care of his feet, says **V.Ramnarayan, consultant orthopaedic surgeon SRMC**. "Watch out for numbness, foot ulcers and carefully examine spaces between the toes and the soles of the feet. Socks should be washed regularly and changed every day and one should use footwear, preferably with ankle support. Nails should not be cut short and sharp edges should be filed," he says. Special care should be taken by those who plan to go on temple visits and have to walk barefoot. "Trivial foot lesions precede 85 per cent of leg amputations in India. Almost 75 percent of amputations are carried out in neuropathic feet with secondary infection, which are potentially preventable.

**J Margolis, 2011** In Canada Medicare Parts A and B fee-for-service beneficiaries with diabetes and foot ulcer, the prevalence of microvascular and macrovascular complications is about 46% and 65%, respectively. Further, among those with a lower extremity amputation, the prevalence of microvascular and macrovascular complications is about 46% and 76%, respectively. The annual mortality rate for Medicare Parts A and B fee-for-service beneficiaries with diabetes who have an incident of diabetic foot ulcer is about 11%; for those with an incident of lower extremity amputation. About 22% or 2.3 million Canadians live with diabetes today.

In Canada, 15% or 345,000 will develop a diabetic foot ulcer in their lifetime. Among the diabetics 621,000 Canadians with diabetes reported in 2008 that they suffer from nerve damage. Canadians with diabetes are 23 times more likely to be hospitalized for a limb amputation than someone without diabetes. More than half of s

these amputations may have been prevented by appropriate footwear and more effective nail and foot care.50% of all lower limb amputations in Ontario are directly related to diabetes. **Canadian diabetic association, 2014 Feb.**

**Dr Hemang baxie** said that diabetic foot ulcers doubles the death rate and heart attack risk while increasing risk for stroke by 40% Diabetic foot lesions are the main cause of disability, sufferings, absence from work, frequent hospital visits, and increase in expense by hospitalization. Almost 50 to 75% of lower extremity amputations are performed on people with diabetes. A study was conducted on "Need for education on foot care in diabetic patients in India". The study revealed that women with low educational status had more problems like gangrene, foot ulcers (27.2%). The study concluded that the importance of patient education on foot care principles is important especially considering the magnitude of the problem of diabetes, the lower levels of literacy and poor socio economic status of many patients in this country.

The investigator during his clinical experience observed that many of the people with long standing diabetes were not much aware about the care of their foot and often ignored to report doctor in the early stage of foot ulcer, He also found that many diabetic patients lack knowledge on foot care and were negligent. They were not aware of the preventive aspects to prevent diabetic foot. So the researcher found that this study will be useful and there would be benefit to nursing practice. This study is intended to assess the effectiveness of foot care instruction on knowledge and practice among diabetic patients. All the above studies and materials enlightened the investigator to do this study.

## 1.3 STATEMENT OF PROBLEM:

A Study To Assess The Effectiveness Of Foot Care Instruction On Knowledge and practice among Patients With Diabetes Mellitus in a Selected Community at Kanyakumarai District.

## 1.4 AIM OF THE STUDY

- The aim of the study is to determine whether the foot care instruction make any difference in the knowledge and practice of foot care among Diabetic patients.

## 1.5 SPECIFIC OBJECTIVES:

- To assess and compare the level of knowledge on foot care in the experimental and control group before and after the intervention.

- To assess and compare practice with regard to the foot care before and after the intervention.

- To associate the selected demographic variables with level of knowledge and practice before the foot care intervention.

## 1.6 HYPOTHESES:

$H_1$: There will be a significant difference in the mean knowledge scores of diabetic patients between the experimental and control group before and after the intervention.

$H_2$: There will be a significant difference between the mean practice scores of diabetic patients between the experimental and control group before and after the intervention.

1.7.1 EFFECTIVENESS:

The positive changes expected in the level of knowledge and practice of foot care among diabetics as a result of foot care instruction.

1.7.2 FOOT CARE INSTRUCTION:

It refers to the information on foot care provided by the investigator to the diabetics in a group of 6-8 persons through a structured teaching module, and video demonstration.

1.7.3 KNOWLEDGE:

It refers to the awareness of diabetics on foot care and it is assessed using a structured interview schedule which was prepared by the investigator.

1.7.4 PRACTICE:

It refers to the care of foot performed by the diabetics. In this study it is assessed using rating scale prepared by University of Nottingham 2007.

1.7.5 DIABETIC PATIENTS:

The patients diagnosed with the history of Type 2 Diabetes Mellitus for 2 years and above and residing in the selected community areas of Kanyakumari District.

1.7.6 SELECTED COMMUNITY:

It refers to the residential areas located in (namely Alanchy), Kanyakumari district.

1.7.7 PREVENTION

It refers to the efforts taken towards curtailing the onset of diabetic foot among the diabetics.

**1.8 ASSUMPTION**

Diabetic patients have inadequate knowledge regarding prevention of foot ulcer. Patient's knowledge is influenced by variables such as Sex, Age, Educational status, Occupation, Marital status, Duration of diabetes, diabetes education.

## 1.9 LIMITATIONS:

- Practice of foot care was assessed using the rating scale based on the care report of the samples, it may be subjective and not highly reliable
- Because of the short duration of the study follow up assessment and observation could not be done.

## 1.10 DELIMITATION

- This study is limited to the diabetics residing in the selected community area.

## 1.11 SCOPE OF THE STUDY

The improvement in the level of knowledge and practice is the clear indication of effectiveness of foot care instruction. This intervention will be beneficial for the diabetics. It can be easily implemented and taught by Nurses who are employed in diabetes hospitals, clinics and community health centers. The regular practice of foot care will improve the quality of foot, prevent foot ulcer and preserve the limbs.

## 1.12 CONCEPTUAL FRAMEWORK

A conceptual model can be defined as a set of concepts and those assumptions that integrated them into a meaningful configuration **(Fewett, 1980).**

"Conceptual frame work refers to interrelated concepts or abstractions that are assembled together in some rational scheme by virtue of their relevance to a common theme" (**Polit and Hungler, 1997).**

A theory is a set of interrelated concepts, adapted for a scientific purpose, definitions and propositions that present a systematic view of phenomena by specifying relations among variables with the purpose of explaining and predicting the phenomena (**Kerlinger 1986**).

The development of a conceptual model is a fundamental process required before conducting actual research. The framework influences each step of research process. The conceptual frame work in nursing research helps to provide rationale for predictions about relationship among the variables in the study.

Conceptual framework forms the base for observations, definitions of concepts, research design, interpretation etc. Conceptual framework gives meaning to the problem and study findings by summarizing existing knowledge in field of inquiry and identifying linkage between concepts.

For this study, the conceptual framework used is **Titler Effectiveness** Model [2004]. Effectiveness indicates the benefits of health care that are achieved under ordinary circumstance for patients. This study focuses on evaluating effectiveness of foot care instructions on foot care in adults with Type 2 diabetes Mellitus.

This theory has been derived from Roger's Diffusion model of Innovation (2004). This is a model which states how to inculcate novel ideas into existing practice. The way in which innovations and evidence based actions can be initially tested and finally incorporated into a system is dealt with clarity.

Titler's model throws light into all those factors existing in the phenomena, which can have a say in the result of the actions. Here, it is stated as 'Factors influencing characteristics. This model is ideal for experimental and qualitative projects since it expresses the comparative picture between group receiving the new idea and one which is following the traditional way. This is expressed as Experimental and Control groups. 'Process' is the level which shines light into the evidence based newly developed idea. It is this notion, for which the researcher will check the effectiveness.

The 'effectiveness' can be assessed through analyzing the outcome of both groups. This will prove whether the new innovation is effective and worthy of incorporating into the system or is to be rejected.

In this study, the independent variable is foot care instructions and dependent variables are knowledge and practice of foot care.

Several factors are linked together in determining the outcomes of foot care. In the study, the experimental group will be subjected to foot care instructions on foot care and outcome of intervention was assessed in terms of level of knowledge and practice of foot care.

The application of foot care instruction through education and video teaching regarding foot care to experimental group includes the following:

Knowledge aspect:

-Diabetic knowledge

-Diabetic management

-Foot care

-Foot risk assessment

Practice aspect:

-Foot care practice

-Foot wear practice

**FIGURE 1.1, MODIFIED TITLER EFFECTIVENESS MODEL [2004]**

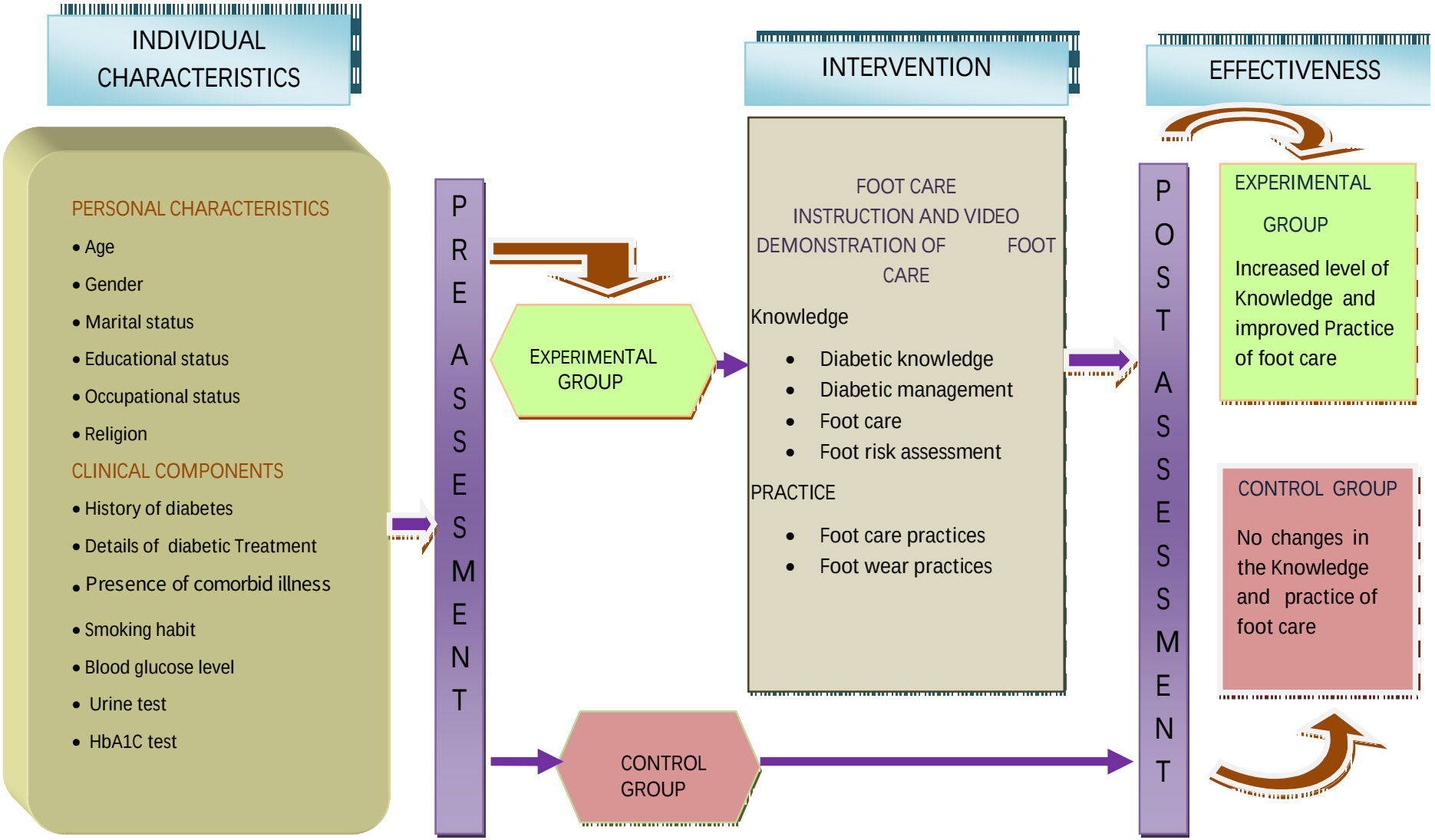


**FIGURE 1.1. MODIFIED TITLER EFFECTIVENESS MODEL [2004]**

# REVIEW OF LITERATURE

# CHAPTER II

## 2. REVIEW OF LITERATURE

Review of literature is a critical summary of research on a topic of interest generally prepared to put a research problem in proper context to identify gaps and weakness on previous studies to justify a new investigation.

The review of literature for the present study has been done from published articles, textbooks, reports and pub med and Medline search.

The group of the study based on the following

2.1. Studies related to prevalence and incidence of Diabetic Foot Ulcers.

2.2. Studies related to knowledge and practice of foot care among diabetic patient

2.3. 2.3Studies related to patient education and prevention of Diabetic Foot Ulcer among diabetic patients.

### 2.1 STUDIES RELATED TO PREVALENCE AND INCIDENCE OF DIABETIC FOOT ULCERS.

**Molleberg. J, et al, 2004** conducted a study on "Regional differences in risk factors and clinical presentation of diabetic foot lesions". The aim of the study was to determine differences in underlying risk factors and clinical presentation of foot problems among people with diabetes in different regions. Six hundred and thirteen consecutive patients with diabetic foot lesions were from 3 centers (Germany, Chennai (India) Tanzania (TAN)). Diabetes related data, risk factor; lesion related data were collected from each patient. Result of the study was the average diabetes duration until the onset of the initial foot lesion was 14 years in (GER) 12 years in Chennai (India) But only 5 years in TAN The corresponding patients age were 71, 56, and 51 years. Neuropathy was common to patients in all 3 centers. Inadequate footwear was the most common cause of lesions in GER (19%) Lack of foot Wear, irregular foot care and burns were the primary precipitating factors among patients in

(TAN) & India.

**Batista F, et al 2005** conducted a study on "High prevalence of potential foot problems in India". The study comprised 68% of men and 32% women the mean age was 53.7 & 59.3 years with a mean duration of diabetes of 9.5 + 6.2 years. Nearly 95% of the patients belonged to the upper and middle-income group. The majority (88%) wore footwear only outside their home. (10%) inside & outside the home (2%) never wares any footwear at all. The results of the study reported Dry skin (75%)In growing toe nail (13%) heel fissures (46%) Web space interring (3%) Fungal nail infection (3%) Callus (15%) This study showed a rather high prevalence of potential foot problems in healthy diabetic patients who had no apparent foot complication. It highlighted the importance of proper foot examinations in all diabetic patients, irrespective of whether or not they have foot complications.

**Lavery L.A. 2009** conducted a study on "screening diabetic patients at risk for foot ulceration. A multi center hospital – based study in France". The objective of the study was to determine the prevalence of risk factors for diabetic foot ulceration in diabetic patients free to active pedal ulceration in a hospital setting. The study suggested that prevalence of risk factors for foot ulceration is rather high in a hospital based diabetic population, emphasizing the need for implementing screening and preventive strategies to decrease the burden of diabetic foot problems and to improve the quality of life for people with diabetes.

**Shobhana. J. 1999**. conducted a study on "Incidence of factors favoring recurrent foot ulcers in diabetic patients". The studies revealed that patient with foot ulcers have a high risk of relapse and amputation. Several studies have reported that 28 – 51% of amputed diabetics will have a second amputation of the lower limb within five years of the first amputation. The purpose of this study was to assess the incidence of factors favoring relapse within two years. The finding of the study was 42 cases of relapse (46.6%) male gender predominated in the relapse patients with a sex ratio of 3:2, Mean age at relapse was 55 years. 71.5% of the patients had type 2 diabetes. The findings illustrated the importance of specialized management of diabetic patients with lesions. Adequate care of the lesions and preventive measures against risk factors are needed.

**Deribe B, et al (2014)** conducted a study on "prevalence and factors influencing diabetic foot ulcer among diabetic patients attending Arbaminch hospital, south Ethiopia". It was reported that out of the total 216 study subjects, about 32(14.8%) had diabetic foot ulcer, 129(59.7%) were males, 61(28.2%) from rural, 132(61.11%) were overweight, 97(44.5%) had poor diabetic foot self care practice and 80(37%) of them had secondary education. rural residence (AOR=4.074, 95% CI 1.262-13.151), absence of co-morbidity (AOR=0.611, 95% CI 0.131-0.955), mean arterial blood pressure greater than 90(AOR=5.113, 95% CI1.285-20.347), duration of diabetes for more than 10years (AOR=8.452, 95% CI 2.365-30.994).

**Pollock R D, 2004,** A multi centric study from India - profile of diabetic foot complications and its associated complications was done. The aim of the study was to determine the prevalence of foot complications. The result revealed that the prevalence of neuropathy was 15%(n=193) and PVD was 5% (n=64), infections were present in 7.6% (n=100) of patients. The infection rate varied from 6-11% in the different centers. Like (Chennai, Madurai, Vellore and Delhi) nearly 30% of subjects had undergone a minor or major amputation. The study concluded that effective foot care advice should be propagated to reduce the burden imposed by diabetic complication particularly in developing countries like India**.**

**Unwin N C, 2009** conducted a study on "Amputation and mortality in new onset diabetic foot ulcers stratified by etiology". The objective of the study was to identify whether foot ulcers and their complications are an important cause of morbidity and mortality in diabetes. The result of the study was among 185 patients studied, 41% had peripheral vascular disease, neuropathy 45%. 16% had neuro ischemic ulcers which are associated with high morbidity and mortality.

## 2.2 STUDIES RELATED TO KNOWLEDGE AND PRACTICE OF FOOT CARE AMONG DIABETIC PATIENT

**M.M.Singh (2001)** conducted a study on "Experiences and guide lines for foot care practices of patients with diabetes mellitus". The findings revealed predominantly negative experiences in the internal and external environments of the persons with diabetes mellitus; as well as foot care knowledge and practices. The study

recommended that to improve diabetes mellitus as well as their foot care knowledge and skills through education.

**Bell RA, et al 2005** conducted a study on "Disease knowledge in patients attending a diabetic foot clinic". The study revealed that foot specific patient education is an essential element of a health system diabetic foot program. Foot specific patient education must be individualized because of cognitive deficits in individuals with long-standing diabetes. In this study 200 patients were asked to provide demographics and 10 multiple-choice questionnaires. All received ongoing foot-specific patient education. The result of the study was approximately 80% were able to respond appropriately to simple questions related to the care of their "at risk" feet. The study concluded that patient with diabetes who are at risk for the development of diabetic foot ulcers should receive ongoing foot specific patient education. This information needs to be constantly reinforced, as retention drops with time.

**Vishwanathan.V, et al 2005** conducted a study on "Knowledge and self-care practices of diabetics in a resettlement colony of chandigarh" revealed that self-care is an important component of diabetes control programme. A cross-sectional survey was carried out in a resettlement colony of chandigarh and 60 diabetics aged 20 years and above were identified. Their knowledge and practice regarding diet, genital hygiene, care of foot, wound, complications of diabetes and medication was assessed using a semi structured interview schedule. The result of the study was (60%) diabetic consumed whatever was cooked in the family. (18.3%) diabetics knew that sweet should be avoided (51.7%) general hygiene (63.3%) foot care through regular washing. The study suggested that there is a need to orient and motivate health personal in educating foot care.

**Smith S L, et al 2014** conducted a study on " Meeting the educational needs of people at risk of diabetes related amputations" a vignette study with patients and professionals. The objective of the study was to investigate how patients and professionals view the role of advice in foot care, in order to inform educational practice. The study reveals that for effective prevention of foot ulcer patients need to understand how diabetes impacts on their health. Foot care education should begin early be patient centered and delivered with empathy by professionals whom the patients trust.

## 2.3 STUDIES RELATED TO PATIENT EDUCATION AND PREVENTION OF DIABETIC FOOT ULCER AMONG DIABETIC PATIENTS.

**Morbach.S.2004** conducted a study on "Diabetes foot self care practices in a rural tribal ethnic population". The purpose of the study was to assess the level of self-care on foot performed in a rural population of older adults, and to identify factors associated with foot-self care. The result of the study revealed that foot care practices and behaviors reported at least 6 days/week ranged from 35.6% for inspecting shoes to 79.2% for not soaking feet.

**Kaur.K (1998)** who conducted a study on "Knowledge and practice of foot care of people with diabetes". The study revealed that deficiencies in knowledge included the inability to sense minor injury to the feet (47.3%) proneness to ulceration (52.4%), and effects of smoking on the circulation (44.5%). The results highlight areas where efforts are needed to improve knowledge and practice, which contributes to the prevention of foot ulcers and amputation.

**Lavery LA, et al 2005** conducted a study on "Meeting the educational needs of people at risk of diabetes related amputation". The conclusion of the study is, for effective preventive care, patients need to understand how diabetes impacts on their health. Foot care education should begin early, should be patient centered and delivered with empathy by professionals whom the patients trust. The finding reflects patient and professional expectations in educational practice, and then for more relevance for other chronic conditions for which much education and advice is related.

**Madhavan S, 2005** conducted a study on "Amputation prevention initiative in 14south India; Positive impact of foot care education". The objective of the study was to determine whether intensive treatment and education strategies for type 2 diabetic patients with high-risk diabetic foot disease helps in preventing foot amputations. The result of the study was among the 1,259 group 3 subjects who came for follow up 718 (57%) strictly followed the advice given and 541 (43%) did not follow ulcers presented during the recruitment had healed in 585 (82%) subjects who followed the advice, but in only 269 (50%) subjects who did not. A significantly larger proportion of subjects who did not follow the advice developed new problems (26%) and required surgical procedures (14%) compared with those who followed the advice (5

and 3%) respectively. The study concluded that intensive management and foot care education are helpful in preventing newer problems and surgery in diabetic foot disease**.**

**Malgrange D, et al 2003 ,** conducted a study on "Cooling the foot to prevent diabetic foot wounds a proof of concept trial". The study revealed that the etiology of neuropathic diabetic foot wounds can be repetitive stress ulceration. The final path way to ulceration consists of an inflammatory response leading to tissue break down mitigation of this response might reduce the risk of ulceration. The study concluded that cooling the foot may be a safe and effective method of reducing inflammation and may serve as a prophylactic or interventional tool to reduce skin break down risk.

**Ewton P, et al 2005** conducted a study on "Disease management for the diabetic foot effectiveness of a diabetic foot prevention program to reduce amputations and hospitalizations". The objective of the study was to demonstrate the effectiveness of a diabetic foot disease management program in a managed care organization after implementation of disease management program. The incidence of amputations decreased 47.4% from 12.89 per 1000 diabetics per year to 6.18 ($P<0.05$). The number of foot related hospital admissions decreased 37.8% from 22.86 per 1000 numbers per year to 14.23 (37.8%). The average in patient length of stay was reduced 21.7% from 4.75 to 3.72 days ($P<0.05$). The study concluded that a population based screening and treatment program for the diabetic foot can dramatically reduce hospitalizations.

**Neders, et al 2003** conducted a study on "Patient education for preventing diabetic foot ulceration". The objective of the study was to assure the effectiveness of patient education on the prevention of foot ulcer in patients with diabetes mellitus. The study revealed that participant's foot care knowledge significantly improved with education in two trials. In one trial, foot care knowledge improved significantly in the control group, in contrasts to the intervention group. The study suggested that patient education may reduce the foot ulceration and amputations especially in high-risk patients.

**DR, Constantinides 2005** conducted a study on "Home monitoring of foot skin temperature to prevent ulceration". The objective of the study was to evaluate the effectiveness of home infrared temperature monitoring as a preventative tool in

individuals who are at high risk for diabetes-related lower extremity ulceration and amputation. The study suggested that at home, patient self monitoring with daily foot temperature may be an effective adjunctive tool to prevent foot complications in individuals at high risk for lower extremity ulceration and amputation.

**Lavery LA, et al 2005** conducted a study on "Preventing foot ulcers in patients with diabetes". The objective of the study was to systematically review the evidence on the efficacy of methods advocated for preventing diabetic foot ulcers in the primary care setting. The study revealed that educating patients about proper foot care and periodic foot examinations are effective interventions to prevent ulceration. These patients might benefit from patient education, prescription of footwear, and intensive podiatric care. A randomized clinical trial evaluated the benefit of high-risk diabetics using (IR) Infrared temperature and self-examination treatment group. The finding of the study was, patients in the infrared (IR) group had significantly fewer foot ulcerations than in the other two treatment arms (11% Vs 29% and 31%).

**Stephan.S.A 2008** conducted a study on "cost effectiveness of prevention and treatment of the Diabetic foot". The study revealed that compared with current care, guideline based care resulted in improved life expectancy, gain of quality adjusted life years (QALYs) and reduced incidence of foot complications. The life time cost of management of the diabetic foot following guideline based care resulted in a cost per quality adjusted life years, gain of <25,000 dollar, even for levels of preventive foot care as low as 10%. The cost effectiveness varied sharply depending on the level of foot ulcer reduction attained.

**Dr.Harold Gilkman. 2004,** conducted a study on "Diabetic foot in a long-term facility". The study revealed that a gap exists between the established standards and the degree to which the standard are met, so adequate attention to the problem by health care providers efforts to increase awareness of foot care standards and early intervention may be steps to close the gap. Nurses must identify patients at risk for problems and actively intervene to prevent complications from occurring'**.**

**JM Dohanish R, 2005** conducted a study on "Effectiveness of different types of foot wears insoles for the diabetic neuropathic foot". The objective of the study was to compare the effectiveness of different types of footwear insoles in the diabetic

neuropathic foot. The result of the study was patients who were using therapeutic foot wear showed however foot pressure (group 1.6.9 + 3.6), group 2,6.2+3.9, and group 3,6.8+6.1 kpa (p=0.000), While those whose used the non therapeutic foot wear had an increased foot pressure (group 4, 40.7+ 20.5) kpa (p=0.008) the occurrence of new sections was significantly higher in patients in group 4 (33%) when compared with that of all other groups (4%).The study concluded that therapeutic foot wears is useful to new ulceration and consequently the amputation rate in the diabetic population.

**Arcury TA, et al. 2007,** conducted a study on "Assessment of group versus individual diabetes education" a randomized study. The objective of the study was to compare the effectiveness of delivering diabetes education in either a group or individual setting using a consistent evidence – based curriculum. The result of the study was both educational settings had similar improvement in knowledge, health related quality of life, attitudes and all other measured indicators. The study reveals that diabetes education delivered in a group setting when compared with an individual setting was equally effective at providing equivalent or slightly greater improvements in glycemic control.

**Donohoe M E, et al, 2005** conducted a study on "a foot care programme for diabetic unilateral lower limb amputees". The objective of the study was to assume the efficiency of a specialist foot care programme designed to prevent a second amputation and to assess peripheral vascular disease (PVD) and peripheral neuropathy in diabetic unilateral lower limb amputees. The result of the study was the patients who proceeded to a bilateral amputation (n=22) are those who remained as unilateral amputees (n=121). In their level of foot care knowledge and mean neuropathy scores mean ankle-brachial pressure index was significantly lower for the bilateral amputees (0.75 + 1-0.04) compared with the unilateral amputees (0.90 +/- 0.03, mean +/- SEM, P<0.05, over all establishment of a specialist foot care program made no impact an contra lateral limb amputation (22 of 143, 15.4%) compared with the programme (21 of 148, 14%) over a 2-year outcome period for each patient. The study concluded that PVD is more closely associated with a diabetic bilateral amputation than neuropathy or level of foot care knowledge. Preventative foot care programs for diabetic unilateral amputees should therefore to identify patients at risk and on the development of timely intervention strategies**.**

**Robinson I, et al, 2005** conducted a study on "Need for education on foot care in diabetic patients in India". The study revealed that women with low educational status had more problems like gangrene. Foot ulcers were present in 27.2%. The study concluded that the importance of patient education on foot care principles, especially so considering the magnitude of the problem of diabetes and the lower level of literacy and poor socioeconomic status of many patients in this country. So, to reduce the incidence of foot ulcers and lower extremity amputations in – patient with diabetes, patient should receive a complete education so that they become active members of their diabetes care team instead of being passive recipients.

**J.M.Jerlin priya,2014** conducted a study on assess the effectiveness of structured teaching programme on knowledge regarding prevention of diabetic foot ulcer among patients with diabetic mellitus in selected hospitals at Kanniyakumari district. The result revealed that majority of diabetic patients had adequate post test knowledge on various aspects with regard to meaning 30 (100%) and symptoms 16 (53.33%) and in prevention aspects majority of 21 (70%) gained moderately adequate knowledge. Hence, it is inferred that teaching programme was effective.

**A.P.Kumarasamy.2014** conducted a study on assess the effectiveness of structured teaching programme (STP) on knowledge about foot care management among patients with the type 2 diabetes mellitus attending Diabetic Clinic at RMMCH". Major findings of the study revealed that knowledge are about foot care management among patients with type 2 diabetes mellitus. Twenty (40%) patients had inadequate knowledge, 24 (48%) of them had moderately adequate knowledge and six (12%) of them had adequate knowledge. In posttest, 36 (72%) patients had adequate knowledge and 14 (28%) of them had moderately adequate knowledge. Pretest mean knowledge score was 16.2 with a standard deviation of 4.65 and posttest mean knowledge score was 22.1 with a standard deviation of 2.65 paired 't' test was applied to compare pre and posttest mean knowledge score. The results indicated that there was statistically significant increase in posttest knowledge ($p<0.001$), this finding indicated that structured teaching programme was effective. There were no statistically significant associations between pre test knowledge and age, gender,

domicile, education, occupation, duration off illness and family history of diabetes mellitus.

**S.Latha March 2011** conducted a study on effectiveness of planned teaching programme on knowledge and practice of foot care for diabetic patients of a selected hospital at Mangalore. The results showed that 57.5% of the samples were having poor knowledge about foot care. This finding is supported by another study conducted in Hong Kong which revealed that diabetic clients had inadequate knowledge on foot care. The data showed that maximum 30, (75%) number of diabetic subjects scored between the range of 0-33% (poor foot care practice). This finding was congruent that of Chan Y M and Molassiotis who conducted a study to assess the relationship between diabetes knowledge and compliance among Chinese which reported that only 19.2% of patients were knowledgeable and 60.8% of clients complied with foot care. Brown (1988) found that 75% of diabetic patients failed to comply with diet and 50% demonstrated inadequate foot care. The mean post-test percentage knowledge and practice scores obtained were significantly.

The review of related literature made a significant contribution to the understanding of the problem under study and developing insights into the problem.

# METHODOLOGY

# CHAPTER- III

## 3. RESEARCH METHODOLOGY

Methodology of research organizes all the components of the study in a way that is most likely to lead to valid answer to the problems that have been posed **(Burns and Grove 2002).**

This chapter deals with the methodology to assess the effect of foot care instruction on knowledge and practice of foot care in adults with Type 2 Diabetes Mellitus. It includes research design, setting, population, sample and sampling technique, sampling criteria, description and construction of tool, pilot study , data collection procedure and data analysis.

### 3.1 RESEARCH APPROACH

The research approach is an overall plan chosen to carry out the study. The selection of research approach is the basic procedure for the conduction of research inquiry. An evaluative approach was used in this study as the study aimed at assessing the effect of foot care instruction with knowledge and practice of adults with Type 2 Diabetes Mellitus regarding foot care.

### 3.2 RESEARCH DESIGN

A Quasi experimental pre test and post test control group design was used to test the effect of foot care instruction on knowledge and practice of foot care.

Experimental Group $O_1$ ------ X ------$O_2$------$O_3$

Control Group $O_1$---------- $O_2$ ----------$O_3$

**O1 -** Assessment of knowledge and practice regarding foot care in the experimental and control group.

**O2 -** Assessment of knowledge and practice regarding foot care on the 15th day in the experimental group after intervention and in the control group without intervention.

**O3 -** Assessment of knowledge and practice regarding foot care on the 30th day in the experimental group after intervention and in the control group without intervention**.**

**X -** Intervention of foot care instructions.

Foot care instruction was given to the experimental group in small group of 6-8, persons Demonstration of foot care was shown through the video demonstration. Post test was conducted on 15th day and again on 30th day after intervention in experimental group. In control group, baseline data was collected and subsequent observations were conducted on 15th day and 30th day without teaching.

## 3.3 VARIABLES IN THE STUDY

- **Independent variable**

  Foot care instruction

- **Dependent variables**

  Knowledge regarding foot care

  Practice regarding foot care

## 3.4 SETTING OF THE STUDY

The study was conducted in a selected community at Alanchy & Kandervilagam in Kanyakumari district, Tamilnadu. This two areas had a population around 13000. In Kanyakumari district there is a Government Medical College Hospital, two private Medical College Hospitals and many private multispecialty hospitals. The common health problems found in the community were Diabetes Mellitus, Hypertension, Dyslipidemia and Obesity.

## 3.5 POPULATION

The population included all the adults with Type 2 Diabetes Mellitus residing in the selected community at Kanyakumari and fulfilled the eligibility criteria.

## 3.6 SAMPLE SIZE

The sample consisted of 60 adults with Type 2 Diabetes Mellitus (30 experimental group and 30 control group) from the selected community areas.

## 3.7 SAMPLING TECHNIQUE

Purposive sampling technique was used. The samples meeting the sampling criteria were included in the study. There were 183 samples met the criteria. The each samples name had collected, we required 60 samples. As per systematic random sampling 183/60 each $3^{th}$ samplings are selected for the study.

## 3.8 SAMPLING CRITERIA

### 3.8.1 Inclusion criteria

- Both male & female.
- Age above 36 years.
- Known case of diabetes for above 2 years.
- Adults with Type 2 Diabetes Mellitus.
- Those who were willing to participate in the study.
- Those who can read and understand Tamil.

### 3.8.2 Exclusion criteria.

- Those who had training about Foot care.
- Those who were critically ill.
- Those who were bedridden.
- Those with the history of diabetic foot ulcers.
- Those with the history of peripheral vascular disorders.
- Patient with visual and hearing problem.

## 3.9 DESCRIPTION OF THE TOOL

The tools used for the collection of the data were a structured interview schedule with two parts and rating scale (Refer Appendix).

### 9.1 Structured interview schedule

**Part 1- Demographic Profile**

This section was designed to collect information such as age, sex, education, occupation of the adults with Type 2 Diabetes Mellitus.

**Part 2-Assessment of knowledge regarding foot care**

This section this section consist of 20 multiple choice questions on various aspects like Diabetic knowledge (4 items), Diabetic management(5 items), Foot care (6 items), and Foot risk assessment (5 items).

### 3.9.2 Rating scale

Rating scale was used for assessing the practice of foot care. It consisted of 29 items, grouped under two areas: foot care practice 16 items, foot wear practice 13 items. It included both positive and negative statement on foot care practice and foot wear practice.

### 3.10 SCORING AND INTERPRETATION OF SCORING

### 3.10.1 Structured Interview Schedule to assess the knowledge on foot care

The minimum obtainable score was 0 and maximum score was 20. The total score was graded as shown in below. The positive statements were scored in a descending sequence of 3,2,1,&0. Negative statements were scored in an ascending sequence of 0,1,2,&3. The total score was scored as shown below.

| Score | Grading |
|---|---|
| 14 to 20 | Good |
| 7 to 13 | Average |
| 0 to 6 | Poor |

### 3.10.2 Rating Scale on practice

Rating scale to assess the practice of foot care

| Score | Grading |
|---|---|
| 59 to 87 | Good |
| 30 to 58 | Average |
| 0 to 29 | Poor |

## 3.11 DEVELOPMENT OF THE TOOL

The tool was developed based on the objectives of the study, review of literature and discussion with experts. The investigator's own experience of working with Diabetic patients also contributed to developing the tool.

## 3.12 VALIDITY OF THE RESEARCH TOOL

The research tool including the objective of the study along with the criteria Check list were submitted to 5 experts – 2 Nursing experts, 3 Diabetologists and Physician and Diabetic foot specialist. The nursing experts were Professors with Master Degree in Nursing and working in different colleges of nursing in Coimbatore with more than 5 years of experience. The Diabetologist Diabetic foot specialist and Physician had more than 10 years of experience and were working in private hospitals at Chennai and Dindigul. The tool was refined based on the experts suggestion. The tool was also translated in Tamil and validated by the language expert.

## 3.13 RELIABILITY OF THE RESEARCH TOOL

The reliability of the structured interview schedule regarding knowledge on foot care was tested by test-retest method. The test was administered to 5 patients and again after a gap of 7 days. Reliability was tested by using Spearman Brown Correlation formula. The obtained 'r' value was 0.938 which showed that the tool was highly reliable and stable. Rating scale used to assess the practice of foot care was a standardized tool hence it was not subjected to reliability testing.

## 3.14 DEVELOPMENT OF VIDEO DEMONSTRATION

The video was developed to demonstrate the foot care procedure based on the review of literature. The researcher developed this video in a real situation. A person

known to researcher was approached and the procedure was demonstrated and recorded after obtaining his consent. The researcher developed this video in such a manner that even an illiterate person can understand and learn about foot care.

### 3.15 VALIDITY AND RELIABILTY OF VIDEO DEMONSTRATION

The video demonstration was viewed by the Diabetologist, Dr.P.N.Someshwara Rao MS, MRCS (Edin), FPS.Consultant podiatric surgeon and Diabetic foot specialist. Pdoiatric care center, Chennai. It was also showed to the department HOD in the College a common man to get suggestions. Based on their suggestions editing was done.

### 3.16 PILOT STUDY

A pilot study was conducted in the same selected community areas to test the feasibility of the study. Formal permission was obtained from the concerned authority of Kanyakumari Municipal Council and church priest of community. The pilot study was conducted for a period of one week in two areas of the community. Based on the inclusion criteria, Type 2 Diabetic adults were selected by purposive sampling techniques. List of diabetic patients were collected from primary health center, and then the families were identified. Ten samples were selected from two areas of the community and assigned five to experimental group and five to control group. In the morning hours the experimental group of one area were covered and in the evening hours the control groups of another area were covered. After a self introduction, the investigator explained the nature of the study to the samples. A pre-test was given to both experimental and control group. After pre-test, in experimental group, five members were provided foot care instruction with video demonstration regarding all the aspects of foot care. For the control group, no teaching was given.

On the 3rd day, again the intervention was given to the experimental group after completing the first post-test and subsequent observation was done in the control group on the same day without intervention.

On 6th day, second post test was conducted to both experimental and control group. The pilot study confirmed the adequacy of the tool and technique. Hence no modification was required to the tool.

## 3.17 DATA COLLECTION PROCEDURE

Before commencement of data collection once again the municipal authority and church committee were informed and written permission was obtained. The chairperson of the municipality and church priest were contacted and briefed about the study. The community church priest gave a brief introduction regarding diabetic foot problem and nature of the study.

After the completion of mass the diabetic patients were asked to assemble in a hall. The researcher introduced himself to the selected population and explained the purpose of the study. Then the samples were selected based on the inclusion criteria and purposive sampling techniques. Data were collected from the 60 samples selected, the researcher obtained the consent and collected baseline information (demographic data). They were also informed about their role in this study. Every day the investigator visited the houses of six to eight adults with Type 2 Diabetes Mellitus in the selected community areas. Pretest was conducted by using structured interview schedule and rating scale.

The experimental group from one area of the community was covered in the morning hours and the control group from another area was covered in the evening hours. In the experimental group, adults with Type 2 Diabetes Mellitus were given foot care instruction with video demonstration on practice of foot care. After the teaching session they were encouraged to interact with the investigator.

During the interactive session the questions related to foot care were answered and additional information was given for the questions which they could not understand through the discussion. On the first day pre test was administered to both experimental and control group. After the pre test foot care instruction was given to experimental group. On the $15^{th}$ day first post test was administered to the both group. On the $30^{th}$ day second post test was administered to both groups. After completing data collection the control group also received the foot care instruction for their benefit The average time taken for each teaching session was 60 minutes. Total data collection period was five weeks.

## 3.18 PLAN FOR DATA ANALYSIS

The obtained data were analyzed by using descriptive and inferential statistics.

### 3.18.1 Descriptive statistics

Frequency and percentage distributions were used to analyze demographic variables and to assess the level of knowledge and practice regarding foot care.

Mean and mean score percentages were used to determine the difference in the level of knowledge and practice regarding foot care.

### 3.18.2 Inferential statistics

Unpaired 't' test was used to determine the significant difference in the level of knowledge and practice in different areas on foot care in experimental and control group.

'Chi squire' test was used to assess the association of selected demographic variables with the level of knowledge and practice.

## 3.19 ETHICAL CONSIDERATION

A prior permission was obtained from the, church committee, priest, village health nurse, clients and their family members. Nature, purpose and type of the study and intervention were explained and obtained a consent from the client. Privacy and comfort of the samples were maintained throughout the study. Adequate explanation was given whenever they asked questions, and records were maintained for each client. The clients in the control group were also provided foot care instruction and allowed to clarify their doubts after the data collection was over, for their benefit.

# DATA ANALYSIS AND INTERPRETATION

# CHAPTER IV

## 4. ANALYSIS AND INTERPRETATION

**James.A.Fain (2003)** defines data analysis as the "systematic organization and synthesis of research data and the testing of research hypothesis using those data". Interpretation is the process of making sense of the results of a study and examining their implications.

This chapter deals with the analysis and interpretation of the data regarding the knowledge and practice of Foot care gathered from 60 adults with Type 2 Diabetes Mellitus. The data have been analyzed and presented under the following headings.

### 4.1. Demographic characteristics of the sample.

The demographic data of the samples is presented in relation to their personal characteristics such as age, sex, education, occupation, religion and also according to disease characteristics such as history of Diabetes Mellitus, treatment measures, comorbid illness, smoking habits, investigations like blood sugar, urine sugar, HbA1C in frequency and percentage.

### 4.2. Comparison of the knowledge regarding foot care in experimental and control group before and after intervention.

Knowledge in four areas (knowledge on diabetes, Diabetic management, Foot care, Foot risk assessment) and also overall in three level (Good, Fair and Poor) in experimental and control group have been analyzed comparatively in frequency and percentage before intervention and after intervention on 15th and 30th day.

The data has also been analyzed in mean score and the significant difference between the experimental and control group in all the four areas of knowledge and overall before and after intervention has been examined by statistical test.

### 4.3. Comparison of the practice regarding Foot care in experimental and control group before and after the intervention.

Foot care in two aspects of practice among the experimental and control group

has been analyzed comparatively in frequency and percentage before intervention and after intervention on 15th and 30th day.

The data has also been analyzed in mean score and the significant difference between the experimental and control group in all the two aspects of practice and overall before and after intervention has been examined by statistical test.

**4.4. Association of selected demographic variables with overall knowledge regarding foot care before the intervention.**

This section presents association of demographic variables with the overall level of knowledge regarding foot care in experimental and control group before the intervention.

## 4.1 Demographic characteristics of the sample

**TABLE 4.1.1**

**FREQUENCY AND PERCENTAGE DISTRIBUTION OF EXPERIMENTAL AND CONTROL GROUP ACCORDING TO PERSONAL CHARACTERISTICS**

**N=60**

| S.No. | Demographic Characteristics | Experimental group (N=30) | | Control group (N=30) | |
|---|---|---|---|---|---|
| | | Frequency | Percentage | Frequency | Percentage |
| 1. | Age | | | | |
| | a) 36– 45 Years | 2 | 6.7 | 2 | 6.7 |
| | b) 46 –55 Years | 9 | 30.0 | 7 | 23.3 |
| | c) 56 – 65 Years | 12 | 40.0 | 13 | 43.3 |
| | d) >65 Years | 7 | 23.3 | 8 | 26.7 |
| 2. | Sex | | | | |
| | a) Male | 13 | 43.3 | 15 | 50.0 |
| | b) Female | 17 | 56.7 | 15 | 50.0 |
| 3. | Education | | | | |
| | a) Illiterate | 5 | 16.7 | 2 | 6.7 |
| | b) Primary | 10 | 33.3 | 7 | 23.3 |
| | c) Secondary | 8 | 26.7 | 9 | 30.0 |
| | d) Collegiate | 7 | 23.3 | 12 | 40.0 |
| 4. | Marital status | | | | |
| | a) Married | 25 | 83.3 | 17 | 56.67 |
| | b) Unmarried | 2 | 6.7 | 4 | 13.33 |
| | c) Widow | 3 | 10.0 | 5 | 16.67 |
| | d) Separated | - | - | 4 | 13.33 |
| 5. | Occupation | | | | |
| | a) Farmer | 1 | 3.3 | - | - |
| | b) Laborer | 6 | 20.0 | 13 | 43.3 |
| | c) Private employee | 4 | 13.3 | 4 | 13.3 |
| | d) Government employee | 3 | 10.0 | 3 | 10.0 |
| | e) Unemployed | 16 | 53.3 | 10 | 33.3 |
| 6 | Religion | | | | |
| | a) Hindu | 2 | 6.7 | 1 | 3.3 |
| | b) Christian | 28 | 93.3 | 29 | 96.7 |
| | c) Muslim | - | - | - | - |

Table-4.1.1 Presents frequency and percentage distribution of experimental and control group samples according to personal characteristics

**Age:**

Nearly half of the samples 12(40%) in the experimental and control group 13(43.3%) were in the age group of 56-65 years, 9(30%) were in the age group of 46-55 years, 2(6.7%) were in the age group of 36-45 years, 7(23.3%) were in the age group >65 years. In the 7(23.3%) were in the age group of 46-55 years, 2(6.7%) were in the age group of 36-45 years, and 8(26.7%) were in the age group of >65years.

**Sex:**

More than half of the sample in the experimental group were females 17(56.7%),and rest were males 13(43.3%) as in the control group both were equally distributed 15(50%) females and males.

**Education:**

Most of the samples were literate. The samples in both experimental group 10(33.3%) and control group 7(23.3%) had primary education, The samples in both experimental group 8(26.7%) and control group 9(30%) had secondary education, The samples in both experimental group 7(23.3%) and control group 12(40%) had collegiate education, and remaining samples in both experimental group 5(16.7%) and control group 2(6.7%) were illiterate.

**Occupation:**

More than half of the samples 16(53.3%) were in the experimental group and 10(33.3%) in control group were unemployed. Only 3(10%) in the experimental and control group were government employees. The samples 4(13.3%) in both experimental group and control group were private employee. The samples in both experimental group 6(20%) and control group 13(43.3%) were laborers and only 1(3.3%)in the experimental were farmers.

**Marital status:**

Many of the samples in the experimental group 25(83.3%) and in the control group 17(56.67%) were married. The samples in both experimental group 2(6.7%) and control group 4(13.33%) were unmarried. The samples in both experimental group 3(10%) and control group 5(16.67%) were widow and remaining samples in the control group 4(13.33%) were separated.

**Religion:**

Almost all the samples in both experimental group 28(93.3%) and control group 29(96.7%) were Christian, remaining samples in both experimental group 2(6.7%) and control group 1(3.3%) were Hindus.

**TABLE – 4.1.2**

**FREQUENCY AND PERCENTAGE DISTRIBUTION OF EXPERIMENTAL AND CONTROL GROUP ACCORDING TO DISEASE CHARACTERISTICS**

**N=30**

| SL No | Disease characteristics | Experimental group (N=30) | | Control group (N=30) | |
|---|---|---|---|---|---|
| | | Frequency | Percentage | Frequency | Percentage |
| 1 | History of Diabetes Mellitus | | | | |
| | a. 2-4Years | 10 | 33.3 | 12 | 40.0 |
| | b. 5-7 Years | 8 | 26.7 | 5 | 16.7 |
| | c. 8-10years | 4 | 13.3 | 8 | 26.7 |
| | d. >10years | 8 | 26.7 | 5 | 16.7 |
| 2 | Treatment measures followed | | | | |
| | a. Oral hypoglycemic Agents | 22 | 73.3 | 23 | 76.7 |
| | b. Insulin | 4 | 13.3 | 1 | 3.3 |
| | c. Both | 4 | 13.3 | 6 | 20.0 |
| 3 | Presence of comorbid illness | | | | |
| | a. No | 17 | 56.7 | 14 | 46.7 |
| | b. Yes | 13 | 43.3 | 16 | 53.3 |
| 4 | Smoking habit | | | | |
| | a. No | 28 | 3.3 | 26 | 86.7 |
| | b. Yes | 2 | 6.7 | 4 | 13.3 |
| 5 | Blood sugar | | | | |
| | a. 100-150mgs/dl | 10 | 33.3 | 15 | 50.0 |
| | b. 151-200 mgs/dl | 8 | 26.7 | 7 | 23.3 |
| | c. 201-250 mgs/dl | 6 | 20.0 | 3 | 10.0 |
| | d. 251-300 mgs/dl | 4 | 13.3 | 3 | 10.0 |
| | e. >301 mgs/dl | 2 | 6.7 | 2 | 6.7 |
| 6 | Results of latest urine test? | | | | |
| | a. Not Done | | | | |
| | b. Done | 30 | 100.0 | 30 | 100.0 |
| | | - | - | - | - |
| 7 | Results of latest HbA1C? | | | | |
| | a. Not Done | 30 | 100.0 | 30 | 100.0 |
| | b. Done | - | - | - | - |

**Table: 4.1.2** shows the frequency and percentage distribution of experimental and control group according to disease condition and treatment information.

**History of Diabetes Mellitus:**

In the experimental group 10(33.3%) and in the control group 12(40%) had Diabetes Mellitus for about 2-4years, the samples in the experimental group 8(26.7%) and in the control group 5(16.7%) had Diabetes Mellitus for about 5-7years, the samples in the experimental group 4(13.3%) and in the control group 8(26.7%)had Diabetes Mellitus 8-10 years, and remaining samples in the experimental group 8(26.7%) and in the control group 5(16.7%) had Diabetes Mellitus for more than 10years

**Treatment measures followed:**

Majority of the samples 22(73.3%) in the experimental group and 23(76.7%) in the control group were taking Oral Hypoglycaemic Agents. Only 4(13.3%) in the experimental group and 1(3.3%) in the control group were taking insulin. Remaining samples 4(13.3%) in the experimental group and 6(20%) in the control group were taking both oral hypoglycaemic agents & insulin.

**Presence of comorbid illness:**

In both the experimental and control group more or less of samples in the experimental group 13(43.3%) and in the control group 16(53.3%) had comorbid illness remaining samples had no comorbid illness.

**Blood sugar level:**

The samples 10(33.3%) in the experimental group and 15(50%) in the control group had blood sugar level in between 100-150 mgs/dl, the samples 8(26.7%) in the experimental group and 7(23.3%) in the control group had blood sugar level of 151 - 200 mgs/dl. The samples 6(20%) in the experimental group and 3(10%) in the control group had blood sugar level of 201-250 mgs/dl, the samples 4(13.3%) in the experimental group and 3(10%) in the control group had blood sugar level of 251-300 mgs/dl and remaining samples 2(6.7%) in the experimental group and 2(6.7%) in the control group had blood glucose level above 301 mgs/dl.

**Smoking habit**

Majority of the samples in the experimental group 28(93.3%) and control group 26(86.7%) had no smoking habit.

**Results of latest urine test and HbA1C Test:**

All the samples 30(100%) in both experimental group and control did not do urine as well as HbA1C test in the result in the recent test.

### 4.2.1 Comparison of the knowledge regarding foot care in experimental and control group before and after intervention

**TABLE – 4.2.1**

**FREQUENCY AND PERCENTAGE DISTRIBUTION OF EXPERIMENTAL AND CONTROL GROUP ACCORDING TO LEVEL OF OVERALL KNOWLEDGE BEFORE AND AFTER INTERVENTION**

**N = 60**

| Level of Knowledge | Experimental Group N=30 | | | | | | Control Group N=30 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Before Intervention | | After Intervention | | | | Base Line Observation | | Subsequent Observations | | | |
| | | | 15th day | | 30th day | | | | 15th day | | 30th day | |
| | F | % | F | % | F | % | F | % | F | % | F | % |
| Good | 1 | 3.3 | 29 | 96.7 | 29 | 96.7 | - | - | - | - | 1 | 3.3 |
| Fair | 15 | 50.0 | 1 | 3.3 | 1 | 3.3 | 23 | 76.7 | 20 | 66.7 | 16 | 53.3 |
| Poor | 14 | 46.7 | - | - | - | - | 7 | 23.3 | 10 | 33.3 | 13 | 43.3 |

**Table 4.2.1** shows frequency and percentage of experimental and control group according to level of overall knowledge before and after intervention.

Nearly half 14 (46.7%) of the samples in the experimental group had poor level of knowledge and remaining 15(50%) had fair knowledge, only one had good knowledge before intervention.

After intervention on the 15th day, the level of knowledge improved to Good level for 29 samples (96.7%) and fair level for 1 sample (3.3%).

On the 30th day after intervention same improvement in the level of knowledge, with good level for 29 samples (96.7%) and to fair level for 1 sample (3.3%).

In the control group, 23 samples (76.7%) had an average level of knowledge and the rest 7(23.3%) had poor level of knowledge in the base line observation.

On the 15th day in the control group, 20 samples (66.7%) had fair level of knowledge and the rest 10(33.3%) had poor level of knowledge in the subsequent observation.

In the subsequent observation on the 30th day in the control group, 16 samples (53.3%) had a fair level of knowledge and the rest 13(43.3%) had poor level of knowledge, only one(3.3%) had good level of knowledge.

The table concludes that the level of knowledge in experimental group had a marked improvement when compared to the control group in the knowledge level.

**TABLE :4.2.2**

**COMPARISON OF OVERALL MEAN KNOWLEDGE SCORE AND STANDARD DEVIATION OF EXPERIMENTAL AND CONTROL GROUP BEFORE AND AFTER INTERVENTION AND LEVEL OF SIGNIFICANCE**

**N=60**

| Observation | Max. Score | Experimental Group N = 30 | | | Control Group N = 30 | | | MD | Un paired 't' value P<0.05 df=58 |
|---|---|---|---|---|---|---|---|---|---|
| | | Mean score | Mean score % | SD | Mean score | Mean score % | SD | | |
| Before intervention | 20 | 7.56 | 37.8 | 2.95 | 7.1 | 35.5 | 1.69 | 0.47 | 0.751NS |
| 15th day after intervention | 20 | 17.97 | 89.85 | 1.51 | 7.50 | 37.5 | 2.01 | 10.47 | 22.73* |
| 30thday after intervention | 20 | 17.97 | 89.85 | 1.52 | 7.13 | 35.65 | 2.91 | 10.83 | 18.08* |

***-Significant. NS- Not Significant.** **Table value**: **2**

**Table-4.2.2** shows comparison of overall mean knowledge score on foot care and standard deviation of experimental and control group before and after intervention and level of significance.

In experimental group overall mean knowledge score before intervention was 7.56(37.8%) where as in control group the score was 7.1(35.5%).Statistically there was no significant difference in mean knowledge score between experimental and control group before intervention ['t' value of 0.75($p<0.05$, df=58)].

On 15th day after intervention the mean knowledge score increased from 37.8% to 89.85% in experimental group, whereas in control group there was a difference slight increase from 35.5% to 37.5%

Statistically there was a significant difference in mean knowledge score between experimental and control group on 15th day after intervention ['t' value of 22.73 ($p<0.05$, df=58)].

On 30th day after intervention the mean knowledge score were same 89.85% in experimental group, where as in control group the knowledge score again decreased from 37.5% to 35.65%

Statistically there was a significant difference in mean knowledge score between experimental and control group on 30th day after intervention ['t' value of 18.08 ($p<0.05$, $df=58$)].

So the hypothesis (H1) the mean knowledge score of experimental group regarding foot care will be significantly higher than the mean knowledge score of control group after intervention is accepted.

The table concludes that the mean knowledge score on foot care had a marked increase in the experimental group after intervention than the control group which remained with almost same mean knowledge score.

**Figure 4.2.1 Overall mean knowledge score of experimental and control group regarding foot care before and after intervention in percentage**

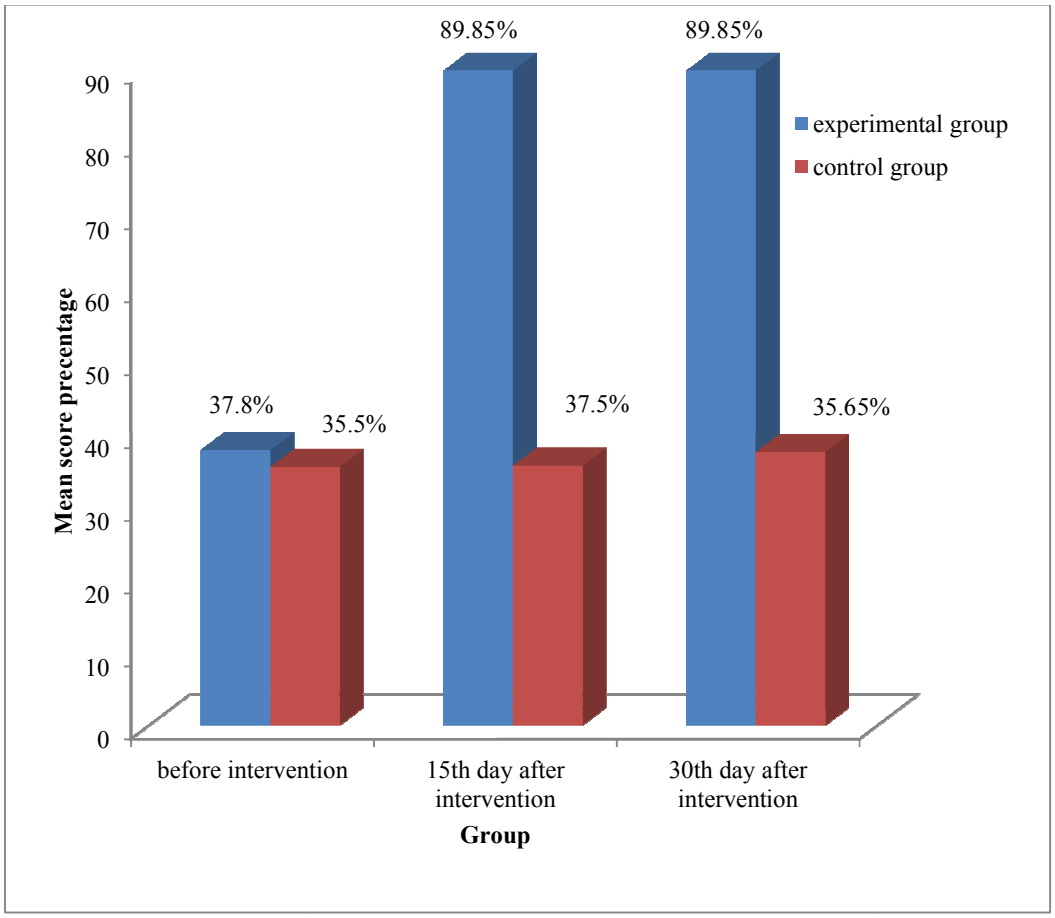


**Figure 4.2.1 Overall mean knowledge score of experimental and control group regarding foot care before and after intervention in percentage**

**TABLE**: **4.2.3**

**MEAN KNOWLEDGE SCORE AND STANDARD DEVIATION OF EXPERIMENTAL AND CONTROL GROUP IN DIFFERENT ASPECT OF FOOT CARE BEFORE INTERVENTION AND LEVEL OF SIGNIFICANCE**

**N=60**

| **Aspects of Knowledge** | **Max Score** | **Experimental Group N = 30** | | | **Control Group N = 30** | | | **MD** | **Un paired 't' value P<0.05 df-58** |
|---|---|---|---|---|---|---|---|---|---|
| | | Mean score | Mean score % | SD | Mean score | Mean score % | SD | | |
| Diabetes knowledge | 4 | 1.83 | 45.82 | 0.91 | 2.23 | 55.83 | 0.68 | 0.4 | 1.962NS |
| Diabetic management | 5 | 1.50 | 30 | 0.97 | 1.67 | 33.32 | 1.18 | 0.17 | 0.595NS |
| Foot care | 6 | 2.13 | 35.55 | 1.31 | 1.87 | 31.1 | 0.91 | 0.27 | 0.921NS |
| Foot risk assessment | 5 | 1.60 | 32 | 1.22 | 1.8 | 36 | 1.10 | 0.2 | 0.695NS |

*** Significant. NS - Not Significant.** **Table value-** 2

**Table: 4.2.3** shows mean knowledge score and standard deviation of experimental and control group in different aspects of foot care before intervention and level of significance.

In the experimental group the mean knowledge score percentage on various aspects of knowledge ranged from 30- 45.82%, the highest score was observed in the aspect of Diabetes knowledge (45.82%), the next score in the aspects of foot care (35.5%), and the next score in the aspects of foot risk assessment (32%) and the least score was in the aspect of diabetic management (30%).

Similarly in the control group the mean knowledge score percentage ranged from 31.1- 55.83% the highest score was observed in the aspect of Diabetes knowledge (55.83%), and the next score in the aspects of foot risk assessment (36%) the aspect of diabetic management (33.32%). the least score was in the aspect of foot care (31.1%)

Statistically, there was no significant difference in the aspects of diabetic knowledge [‘t’ value 1.96($p<0.05$, df=58)], diabetic management [‘t’ value 0.59.($p<0.05$, df=58)], foot care [‘t’ value 0.92($p<0.05$, df=58)], and foot risk assessment [‘t’ value 0.69($p<0.05$, df=58)], in experimental and control group.

There was no significant difference between the mean knowledge score of experimental and control group in the various aspects of foot care before intervention.

**Figure 4.2.2 Mean score of experimental and control group in different aspects of knowledge regarding foot care before intervention in percentage**

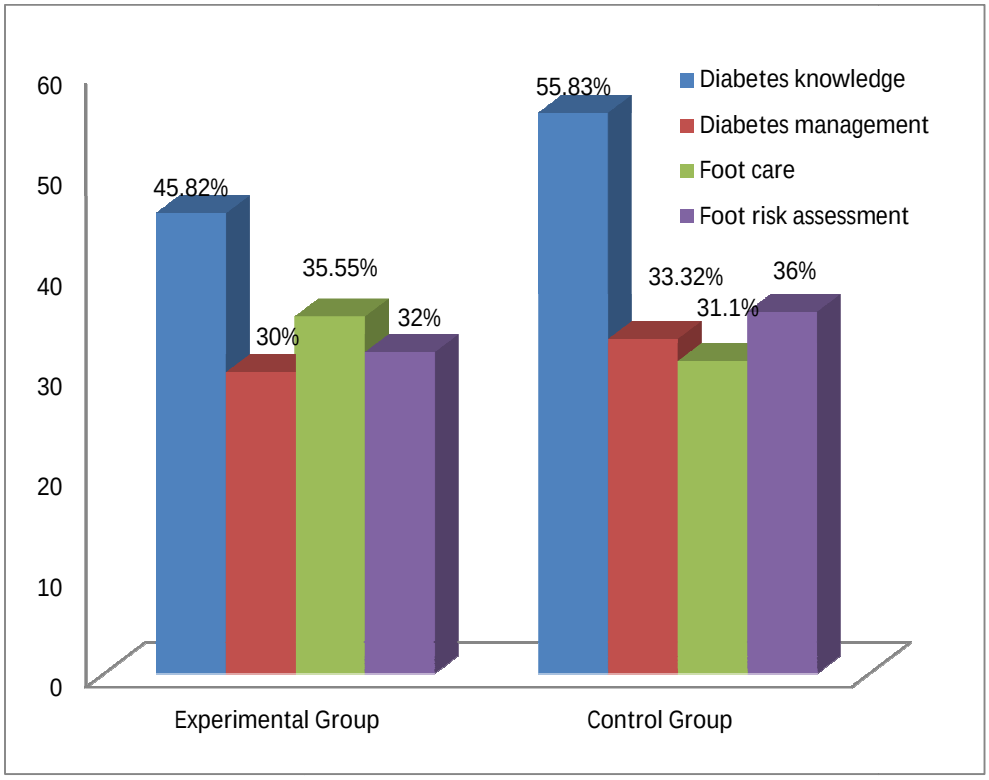


**Figure 4.2.2 Mean score of experimental and control group in different aspects of knowledge regarding foot care before intervention in percentage**

**TABLE – 4.2.4**

**MEAN KNOWLEDGE SCORE AND STANDARD DEVIATION OF EXPERIMENTAL AND CONTROL GROUP IN DIFFERENT ASPECTS OF FOOT CARE ON THE 15th DAY AFTER INTERVENTION AND LEVEL OF SIGNIFICANCE**

**N=60**

| Aspects of Knowledge | Max Score | Experimental Group N = 30 | | | Control Group N = 30 | | | MD | Un paired 't' value P<0.05 df-58 |
|---|---|---|---|---|---|---|---|---|---|
| | | Mean score | Mean score % | SD | Mean score | Mean score % | SD | | |
| Diabetes knowledge | 4 | 3.50 | 87.5 | 0.57 | 2.00 | 50 | 0.74 | 1.50 | 8.76* |
| Diabetic management | 5 | 3.67 | 73.32 | 0.88 | 1.57 | 31.32 | 0.82 | 2.10 | 9.55* |
| Foot care | 6 | 5.40 | 90 | 0.81 | 2.37 | 39.32 | 1.33 | 3.03 | 10.68* |
| Foot risk assessment | 5 | 4.47 | 89.32 | 0.78 | 2.57 | 31.32 | 1.04 | 0.24 | 12.24* |

***- Significant. NS- Not Significant.** **Table value-** 2

**Table:4.2.4** shows mean knowledge score and standard deviation of experimental and control group in different aspects of foot care on the 15th day after intervention and level of significance.

On the 15th day after intervention, in the experimental group the percentage of mean knowledge score on various aspects of knowledge showed a variation from 73.32 to 90 in the experimental group, the highest score was observed in the aspect of foot care 90%, the second score in the aspect of foot risk assessment 89.32%, the third score in the aspect of diabetic knowledge 87.5% and the least score was in the aspect of diabetic management 73.32%.

On the 15th day in the control group all the four aspects of mean knowledge score ranged from 31.32 to 50%, in the control group. The highest score was observed in the aspect of diabetic knowledge (50%), the second score in the aspect of the foot care 39.32%, third score in the aspect of foot risk assessment and the leaser sore was on diabetic management 31.32%.

Statistically, there was a significant difference in the mean knowledge score between the experimental and control group in the aspect of diabetic knowledge ['t' value of 8.76($p<0.05$, $df=58$)], in the aspect of diabetic management ['t' value of 9.55($p<0.05$, $df=58$)], in the aspect of the foot care ['t' value of 10.68($p<0.05$, $df=58$)] and in the aspect of foot risk management ['t' value of 12.24($p<0.05$, $df=58$)]. The experimental group had higher mean knowledge score with regard to control group on 15th day after intervention. There was a significant difference in the aspects of basic diabetes knowledge, diabetic management, foot care ,foot risk assessment between experimental and control group after intervention on 15th day..

**Figure 4.2.3 Mean score of experimental and control group in different aspects of knowledge regarding foot care on the 15th day after intervention in percentage**

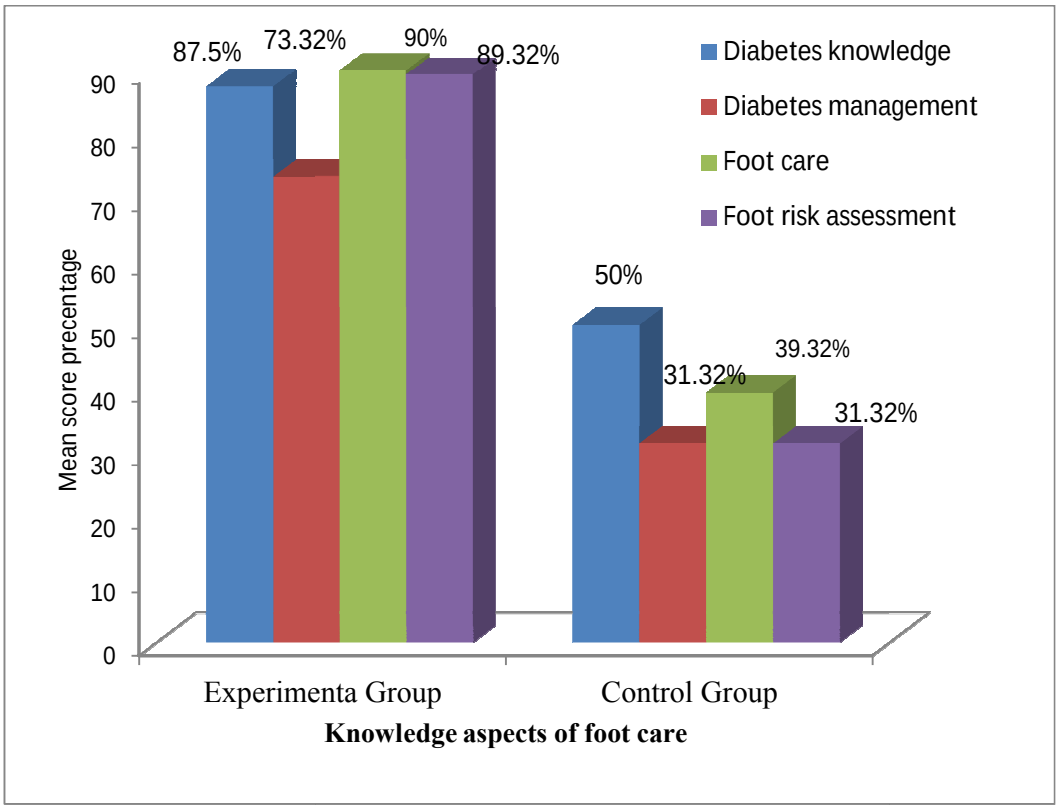


**Figure 4.2.3 Mean score of experimental and control group in different aspects of knowledge regarding foot care 15$^{h}$ day after intervention in percentage**

**TABLE-4.2.5**

**MEAN KNOWLEDGE SCORE AND STANDARD DEVIATION OF EXPERIMENTAL AND CONTROL GROUP IN DIFFERENT ASPECTS OF FOOT CARE ON THE 30th DAY AFTER INTERVENTION AND LEVEL OF SIGNIFICANCE**

**N=60**

| Aspects of Knowledge | Max Score | Experimental Group N = 30 | | | Control Group N = 30 | | | MD | Un paired 't' value P<0.05 df-58 |
|---|---|---|---|---|---|---|---|---|---|
| | | Mean score | Mean score % | SD | Mean score | Mean score % | SD | | |
| Diabetes knowledge | 4 | 3.77 | 94.15 | 0.51 | 1.87 | 46.65 | 0.86 | 1.90 | 10.44* |
| Diabetic management | 5 | 3.90 | 78 | 0.55 | 1.50 | 30.00 | 0.97 | 2.40 | 11.77* |
| Foot care | 6 | 5.53 | 92.22 | 0.73 | 2.17 | 36.10 | 1.51 | 3.37 | 10.99* |
| Foot risk assessment | 5 | 4.77 | 95.32 | 0.43 | 1.60 | 32.00 | 1.16 | 1.17 | 13.99* |

***- Significant. NS- Not Significant.** **Table value-** 2

**TABLE-4.2.5:** shows mean knowledge score and standard deviation of experimental and control group in different aspects of foot care on the 30th day after intervention and level of significance.

On the 30th day after intervention, the percentage of mean knowledge score on various aspects of knowledge showed a variation from 78% – 95.32% in the experimental group, the highest score was observed in the aspect of foot risk assessment 95.32%, the second score in the aspect of diabetes knowledge 94.15%, the third score in the aspect of foot care 92.22% and the least score was in the aspect of diabetic management 78%.

On the 30th day in the control group, all the four aspects of mean knowledge score ranged from 30 to 46.65 percentage, in the control group the highest score was observed in the aspect of diabetic knowledge 46.65%, the second score in the aspect of the foot care 36.10%; third score in the aspect of foot risk assessment 32%, and the least score was in the aspect of diabetic management 30%.

Statistically, there was a significant difference in the mean knowledge score between the experimental and control group in the aspect of diabetes knowledge ['t' value of 10.44($p<0.05$, $df=58$)], in the aspect of diabetic management ['t' value of 11.77($p<0.05$, $df=58$)], in the aspect of the foot care ['t' value of 10.99($p<0.05$, $df=58$)] and in the foot risk assessment ['t' value of 13.99($p<0.05$, $df=58$)]. The experimental group had higher mean knowledge score with regard to control group on 30th day after intervention. There was a significant difference in the aspects of diabetes knowledge diabetic management, foot care, and foot risk assessment between experimental and control group.

**Figure 4.2.4 Mean score of experimental and control group in different aspects of knowledge regarding foot care on the 30th day after intervention in percentage**

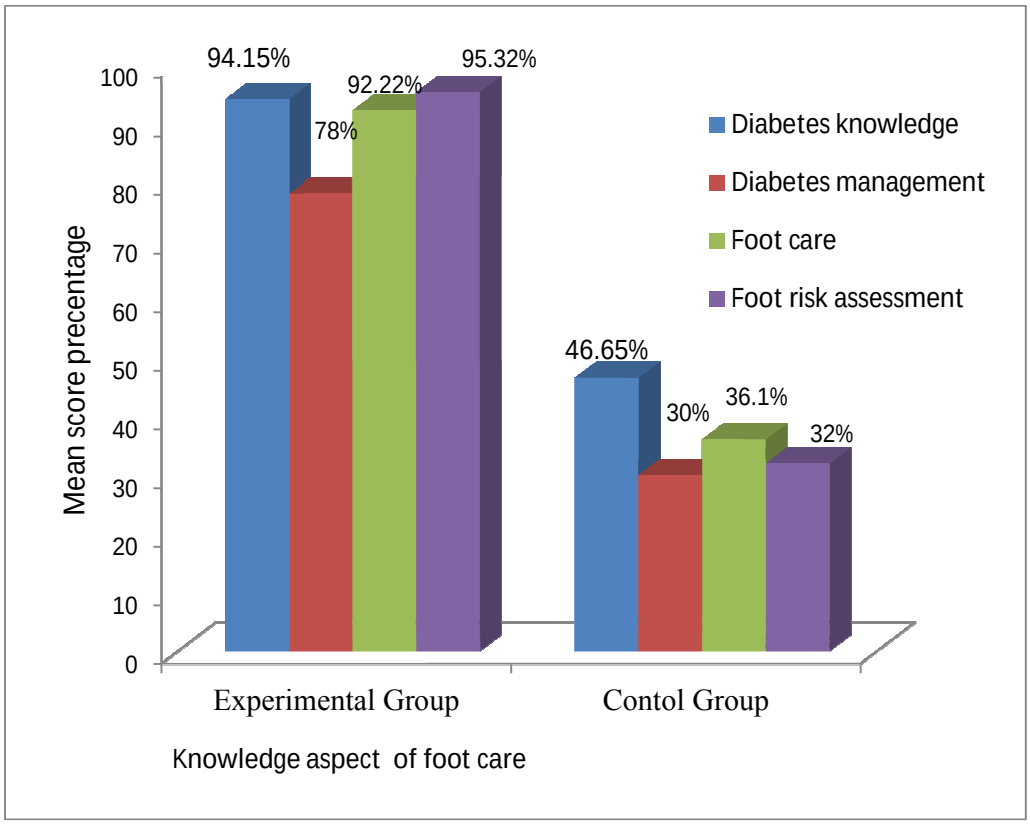


**Figure 4.2.4 Mean score of experimental and control group in different aspects of knowledge regarding foot care 30th day after intervention in percentage.**

## 4.3 Comparison of the practice regarding foot care in experimental and control group before and after intervention

**TABLE 4.3.1**

**FREQUENCY AND PERCENTAGE OF THE EXPERIMENTAL AND CONTROL GROUP ACCORDING TO OVERALL LEVEL OF PRACTICE REGARDING FOOT CARE BEFORE AND AFTER INTERVENTION**

**N=60**

| Level of Practice | Experimental Group N=30 | | | | | | Control Group N=30 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Before Intervention | | After Intervention | | | | Base line Observation | | Subsequent Observations | | | |
| | | | 15th day | | 30th day | | | | 15th day | | 30th day | |
| | F | % | F | % | F | % | F | % | F | % | F | % |
| Good | - | - | 30 | 100 | 30 | 100 | - | - | - | - | - | - |
| Average | 30 | 100 | - | - | - | - | 30 | 100 | 30 | 100 | 30 | 100 |
| Poor | - | - | - | - | - | - | - | - | - | - | - | - |

**Table 4.3.1** shows the frequency and percentage of experimental and control group according to level of overall practice regarding foot care before and after intervention.

In experimental group all the samples 30(100%) had average level of practice before intervention. On the 15th and 30$^{th}$ day after intervention, all samples 30(100%) had good level of practice.

Whereas in control group, all the samples 30(100%) had average level of practice on base line observation. In the subsequent observation on 15th day and 30$^{th}$ day, there were no changes in the level of practice and the number of samples continued to remain in the same level of practice as in the base line observation.

The table concluded that the level of practice had a marked improvement after intervention in the experimental group compared to control group which remained with same level of practice.

**TABLE 4.3.2**

**COMPARISON OF OVERALL MEAN PRACTICE SCORE AND STANDARD DEVIATION IN EXPERIMENTAL AND CONTROL GROUP BEFORE AND AFTER INTERVENTION AND LEVEL OF SIGNIFICANCE**

**N=60**

| Level of practice | Max. Score | Experimental Group N = 30 | | | Control Group N = 30 | | | MD | Un paired 't' value P<0.05 df-58 |
|---|---|---|---|---|---|---|---|---|---|
| | | Mean score | Mean score % | SD | Mean score | Mean score % | SD | | |
| Before intervention | 87 | 42.26 | 48.57 | 4.52 | 41.53 | 47.73 | 4.52 | 0.733 | 0.733NS |
| 15th day after intervention | 87 | 79 | 90.80 | 2.65 | 43.67 | 50.20 | 6.80 | 35.33 | 39.83* |
| 30th day after intervention | 87 | 80.53 | 92.56 | 0.41 | 43.57 | 50.08 | 0.84 | 36.97 | 39.63* |

***-Significant. NS- Not Significant** **Table value** -2

**Table:4.3.2** shows comparison of overall mean practice score and standard deviation of experimental and control group before and after intervention and level of significance.

In experimental group overall mean practice score before intervention was 48.57% whereas in control group the score was 47.73%. Statistically there was no significant difference in mean practice score between experimental and control group before intervention with 't' value 0.733($p<0.05$, df=58).

On the 15th day of observation the mean practice score increased from 42.26% to 79 % in experimental group, where as in control group the mean practice score 47.73% to. 50.02% Statistically there was a significant difference in mean practice score between experimental and control group on 15th day after intervention with 't' value 39.83% ($p<0.05$, df=58).

On the 30th day of observation the mean practice score increased from 42.26 to 80.53% in experimental group, whereas in control group the mean score increased from 47.73% to 50.8.% Statistically there was a significant difference in mean

practice score between experimental and control group on 30th day after intervention with 't' value 39.63($p<0.05$, df=58).

So the hypothesis (H2), there is a significant increase in the mean practice score on foot care in the experimental group compared to control group after intervention is accepted.

The table concludes that the mean practice score on foot care had a marked increase in the experimental group after intervention than the control group which remained with the same mean practice score.

**Figure 4.3.1 Overall mean practice score of experimental and control group regarding foot care before and after the intervention in percentage.**

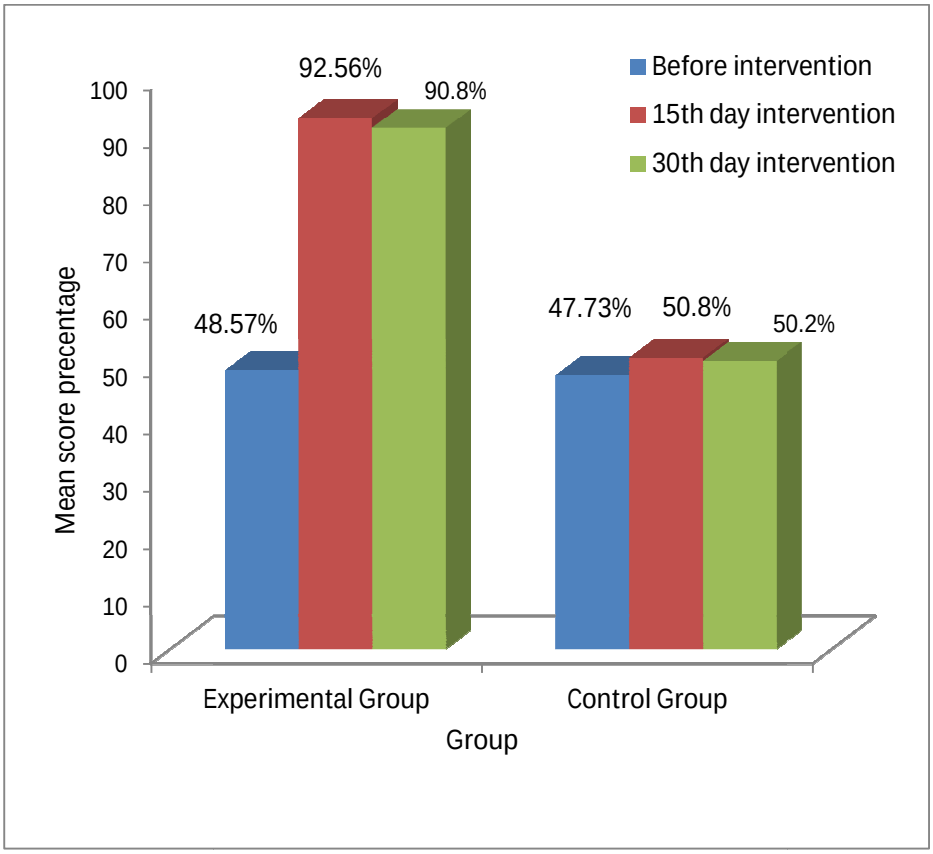


**Figure 4.3.1 Overall mean practice score of experimental and control group regarding foot care before and after the intervention in percentage**

**Table:4.3.3**

**MEAN PRACTICE SCORE AND STANDARD DEVIATION OF EXPERIMENTAL AND CONTROL GROUP IN DIFFERENT ASPECTS OF FOOT CARE PRACTICE BEFORE INTERVENTION AND LEVEL OF SIGNIFICANCE**

**N=60**

| Aspects of Practice | Max Score | Experimental Group N = 30 | | | Control Group N = 30 | | | MD | Un paired 't' value P<0.05 df-58 |
|---|---|---|---|---|---|---|---|---|---|
| | | Mean score | Mean score % | SD | Mean score | Mean score % | SD | | |
| Foot care practice | 48 | 22.07 | 45.98 | 3.10 | 25.00 | 52.08 | 2.92 | 2.93 | 3.77* |
| Foot wear practice | 39 | 20.20 | 51.79 | 1.99 | 16.53 | 42.38 | 2.40 | 3.67 | 6.47* |

***-Significant.** **NS- Not Significant.** **Table value-** 2

**Table:4.3.3** shows mean practice score and standard deviation of experimental and control group in different aspects of foot care before intervention and level of significance.

In the experimental group the mean practice score percentage on various aspects of practice ranged 45.98% to 51.79%, the highest score was observed in the aspect of foot wear practice 51.79% and the next score in the aspect of foot care practice 45.98% . In the control group the mean practice score percentage ranged from 42.38 to 52.08, the highest score was in the aspect of foot care practice 52.08 and the least score was in the aspect of foot wear practice 42.38%.

Statistically, there was a significant difference in mean practice score in the aspects such as foot care practice ['t' value 3.77 ($p<0.05$, $df=58$)] and foot wear practice ['t' value 6.47 ($p<0.05$, $df=58$)] between the experimental and control group before intervention.

**Figure 4.3.2 Mean score of experimental and control group in different aspects of practice regarding foot care before intervention in percentage.**

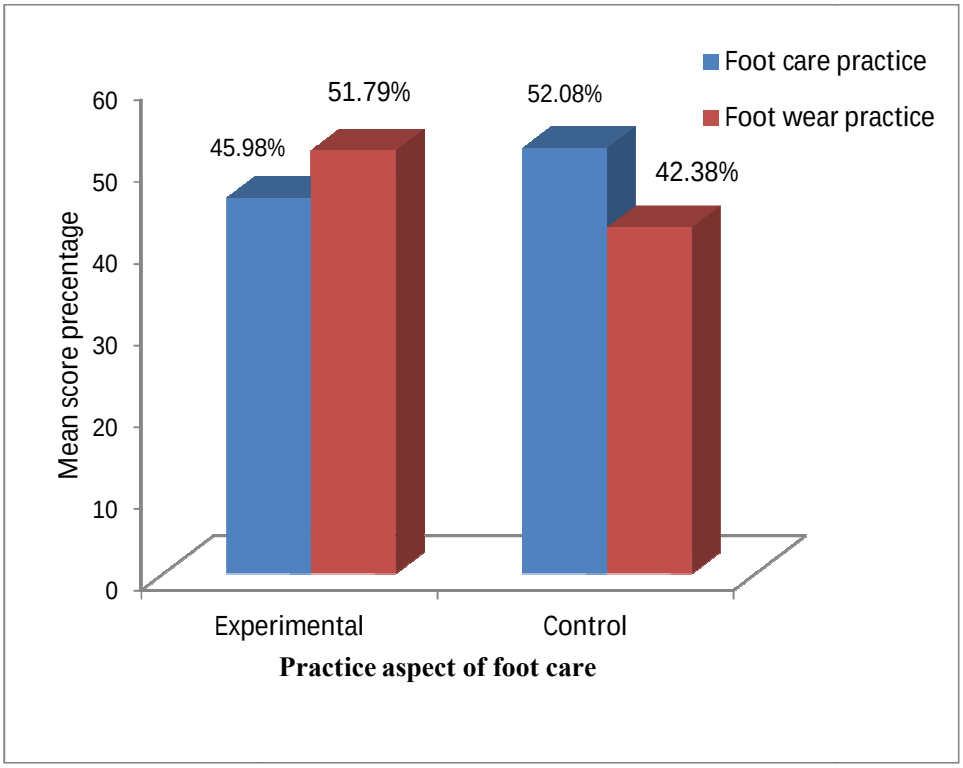


**Figure 4.3.2 Mean score of experimental and control group in different aspects of practice regarding foot care before intervention in percentage**

**TABLE – 4.3.4**

**MEAN PRACTICE SCORE AND STANDARD DEVIATION OF EXPERIMENTAL AND CONTROL GROUP IN DIFFERENT ASPECTS OF FOOT CARE PRACTICE ON 15th DAY AFTER INTERVENTION AND LEVEL OF SIGNIFICANCE**

**N=60**

| Aspects of Practice | Max Score | Experimental Group N = 30 | | | Control Group N = 30 | | | MD | Un paired 't' value P<0.05 df-58 |
|---|---|---|---|---|---|---|---|---|---|
| | | Mean score | Mean score % | SD | Mean score | Mean score % | SD | | |
| Foot care practice | 48 | 44.47 | 92.64 | 1.65 | 25.87 | 53.89 | 18.60 | 18.97 | 31.84* |
| Foot wear practice | 39 | 34.53 | 88.54 | 1.78 | 17.80 | 45.64 | 16.73 | 18.00 | 29.91* |

***-Significant. NS- Not Significant.** **Table value-** 2

**Table : 4.3.4** shows mean practice score and standard deviation of experimental and control group in different aspects of foot care on 15th day after intervention and level of significance.

In the experimental group, the mean practice score in the aspects of foot care practice 92.64%, foot wear practice 88.54% had markedly increased on 15th day after intervention when compared to control group which remains with almost same mean practice score in the aspects of foot care practice 53.89 %, and foot wear practice 45.64%respectively.

Statistically, there was a significant difference in the mean practice score in the aspects of foot care practice ['t' value 31.84($p<0.05$, $df=58$)], and foot wear practice ['t' value 29.91($p<0.05$, $df=58$)], between the experimental and control group on 15th day after intervention.

**Figure 4.3.3 Mean score of experimental and control group in different aspects practice regarding foot care on 15$^{th}$ day after intervention in percentage.**

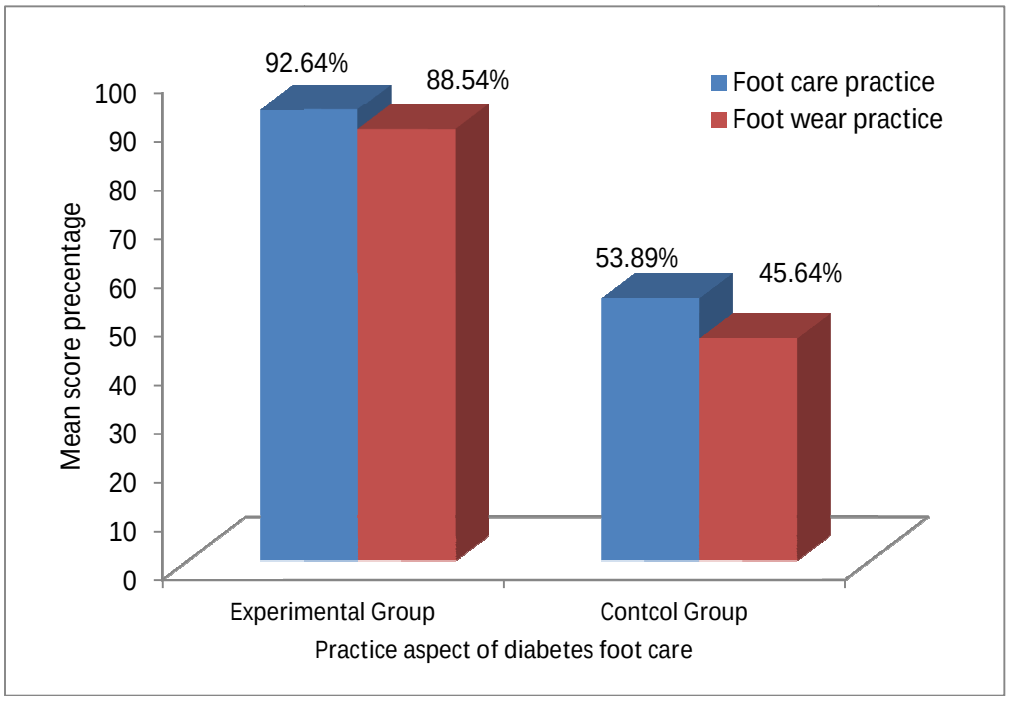


**Figure 4.3.3 Mean score of experimental and control group in different aspects of practice regarding foot care 15th day after intervention in percentage**

**TABLE -4.3.5**

**MEAN PRACTICE SCORE AND STANDARD DEVIATION OF EXPERIMENTAL AND CONTROL GROUP IN DIFFERENT ASPECTS OF FOOT CARE PRACTICE ON 30TH DAY AFTER INTERVENTION AND LEVEL OF SIGNIFICANCE**

**N=60**

| Aspects of Practice | Max Score | Experimental Group N = 30 | | | Control Group N = 30 | | | MD | Un paired 't' value P<0.05 df-58 |
|---|---|---|---|---|---|---|---|---|---|
| | | Mean score | Mean score % | SD | Mean score | Mean score % | SD | | |
| Foot care practice | 48 | 45.03 | 93.81 | 1.27 | 26.07 | 54.31 | 3.16 | 18.97 | 30.48* |
| Foot wear practice | 39 | 35.50 | 91.02 | 1.61 | 17.50 | 44.87 | 2.61 | 18.00 | 32.13* |

***-Significant. NS- Not Significant.** **Table value-** 2

**Table:4.3.5** shows mean practice score and standard deviation of experimental and control group in different aspects of foot care practice on 30th day after intervention and level of significance.

On the 30th day after intervention, the percentage of mean practice score on various aspects of practice increased slightly with a range of 91.02 % - 93.81% in the experimental group, the highest score was observed in a the aspect of foot care practice 93.81%, and the next score in the aspect of foot wear practice 91.02%.

Whereas in the control group the mean practice score remained almost in the same range 44.87% -54.31% percentage, the highest score was in the aspect of foot care practice 54.31% and the least score was in the aspect of foot wear practice 44.87%.

Statistically, there were a significant difference in the mean practice score in the aspect of foot care practice ['t' value 30.48($p<0.05$, df=58)] and foot wear practice ['t' value 32.13($p<0.05$, df=58)] between the experimental and control group.

**Figure 4.3.4 Mean score of experimental and control group in different aspects practice regarding foot care on 30th day after intervention in percentage.**

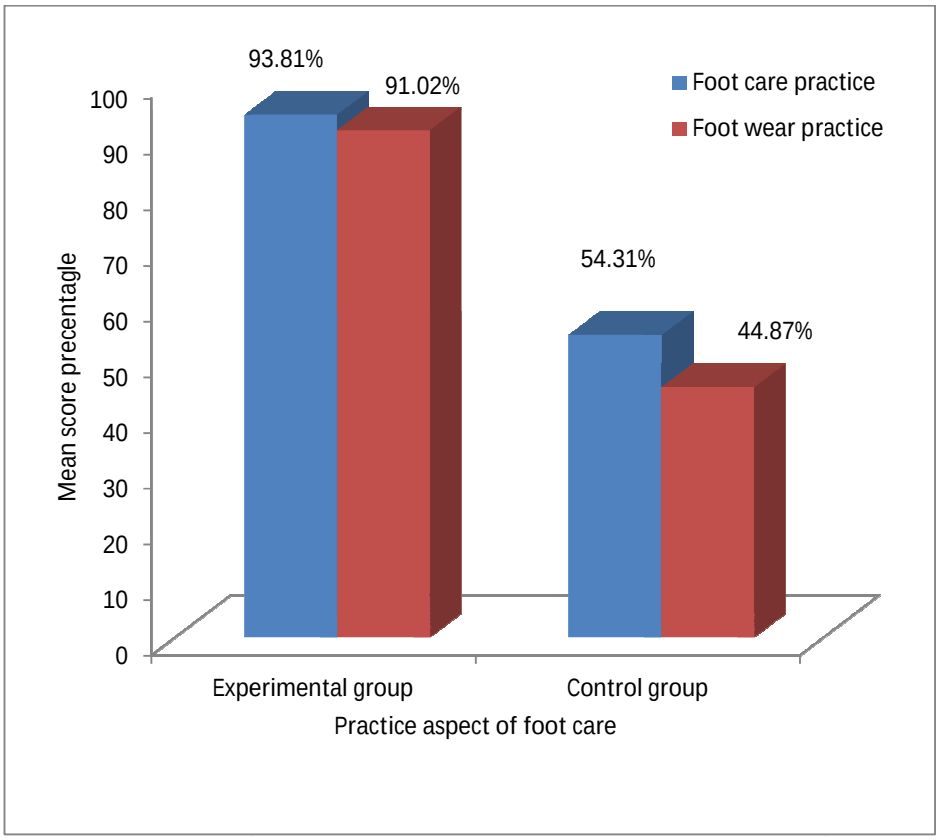


**Figure 4.3.4 Mean score of experimental and control group in different aspects of practice regarding foot care 30th day after intervention in percentage**

**4.4Association of selected demographic variable with over all knowledge regarding foot care before the intervention**

**TABLE :4.4**

**ASSOCIATION OF SELECTED DEMOGRAPHIC VARIABLES WITH OVERALL LEVEL OF KNOWLEDGE ON FOOT CARE BEFORE THE INTERVENTION**

**N=59**

| Sl. No | Characteristics | Level of Knowledge | | | | $\chi 2$ value | $\chi$ 2 table value p <0.05 |
|---|---|---|---|---|---|---|---|
| | | Average | | Poor | | | |
| | | F | % | F | % | | |
| | Age in years | | | | | | |
| | > 55 | 12 | 20.38 | 7 | 11.86 | 0.07 | Df=1 |
| | <56 | 26 | 44.08 | 14 | 23.72 | NS | 3.84 |
| 2 | Gender | | | | | | |
| | Male | 18 | 30.51 | 1011 | 16.94 | 0.01 | Df=1 |
| | Female | 20 | 33.90 | | 18.64 | NS | 3.84 |
| 3. | Educational Status | | | | | | |
| | Primary | 9 | 15.25 | 14 | 23.72 | 3.21 | Df=1 |
| | Secondary | 9 | 15.25 | 08 | 13.56 | NS | 3.84 |
| | College | 12 | 20.38 | 07 | 11.86 | | |
| 6. | Occupation | | | | | | |
| | Employed | 25 | 42.37 | 9 | 15.25 | 1.11 | Df=2 |
| | Unemployed | 13 | 22.03 | 12 | 20.38 | NS | 5.0 |
| 7. | Duration of Diabetes Mellitus | | | | | | |
| | <7years | 18 | 30.51 | 17 | 28.81 | 2.17 | Df=1 |
| | >7 years | 12 | 20.34 | 13 | 22.03 | NS | 3.84 |
| 8 | Comorbid illness | | | | | | |
| | No | 22 | 37.29 | 8 | 13.56 | 0.81 | Df=1 |
| | Yes | 16 | 27.12 | 13 | 22.03 | NS | 3.84 |

***-Significant. NS- Not Significant**

**Table 4.4** shows the association between the demographic variables and knowledge of foot care before intervention.

The table shows that there was no significant association between the age, gender, educational status, occupation, duration of diabetes, comorbid illness and the knowledge before intervention.

# DISCUSSION

# CHAPTER V

## 5. DISCUSSION

The present study focused on assessing the effect of foot care instruction on knowledge and practices among the adults in selected communities with type 2 Diabetes Mellitus. The chapter also deals with significant findings of foot care in diabetes mellitus and discusses about its impact in health care.

### 5.1 Personal characteristics of the experimental and control group

The personal characteristics of adults with Type 2 Diabetes Mellitus in experimental and control groups were depicted in **Table 4.1.1**. The data showed that the samples were both gender, majority having primary, secondary, college education and most of them were unemployed.

The study concludes majority of the patients were under the age group of 56 years, in which 53.3% of the people were female and unemployed about 43.3%.

The finding of this study is consistent with finding of another study on effectiveness of planned teaching program on knowledge and practice of foot care of a selected hospital at Mangalore done by **Mrs. Latha**. S. Most of the clients 16 (40%) were within the age grope of 50 – 59 years most of the samples 17 (42.5%) had primary school education with regard to occupation 16 (40%) of the client were unemployed.

**Table 4.1.2 -** Explains the data regarding the disease condition and treatment.

The findings revealed that most of the samples were having diabetes mellitus for more than two years and majorities were on Oral Hypoglycemic Agents (73.3%) , (13.3%) insulin, (13.3%) both. Nearly half of the samples had comorbid illness.

The finding of this study is consistent with the findings of another study to assess the level of knowledge about diabetes mellitus among diabetic patients in a primary healthcare setting done by **Moodley LM,** 2oo7. It was reported that majority of patients were on oral medication (80.7%), with 9.9% of the remaining population being on insulin only and 9.4% being on both insulin and tablets.

**5.2 Level of knowledge of experimental and control group**

**Tables 4.2.1, 4.2.2, 4.2.3, 4.2.4 and 4.2.5** explain the level of knowledge regarding foot care before and after the intervention.

**Table 4.2.1** explains the frequency and percentage distribution of the experimental and control group according to overall knowledge before and after intervention. In experimental group half 15 (50%) of the samples showed fair level of knowledge and rest of the samples 14(46.7%) showed poor level of knowledge 1 (3.3%) of the samples showed good level of knowledge before intervention. Where as in control group most of the samples 23(76.7%) had fair level of knowledge and the rest 7 (23.3%) had poor level of knowledge. After 15th day and 30th day of intervention the experimental group showed significant improvement in the level of knowledge whereas control group remained in the same level of knowledge as observed before intervention.

The present study revealed that the control group had higher level of knowledge regarding foot care than the experiment group before intervention. However, the level of knowledge was increased in experimental group after the intervention. Whereas in the control group there were no improvements in the level of knowledge.

The finding of this study is consistent with finding of another study to assess the effectiveness of structured teaching programme on knowledge about foot care management among patient with type 2 diabetes mellitus attending diabetic clinic at RMMCH done by A.P. Kumarasamy 2014 Jan It was reported that the knowledge about foot care management among patient with type 2 diabetes mellitus in twenty (40%) patient had inadequate knowledge and 24 (48%) of them had moderately adequate knowledge

**Table 4.2.2-**explains overall mean knowledge score on foot care and standard deviation of experimental and control group before and after intervention and level of significance. Here, the data suggested that the mean knowledge score of experimental (37.8%) and control group (35.5%) showed a slight difference before intervention, after the $15^{th}$ day of intervention mean score of experimental group (89.85%) was higher than the mean score of control group (35.65%), after the $30^{th}$ day of

intervention mean score of experimental group (89.85 %) was much better than the mean score of control group (37.5%). So, the hypothesis (H1), the mean knowledge score of the experimental group regarding foot care will be significantly higher than the mean knowledge score of control group after intervention is accepted.

The finding of this study is consistent with findings of another study to assess effectiveness of structured teaching programme on knowledge regarding prevention of foot care among patients with diabetes mellitus in a selected hospital at Kanyakumari district done by J.M. Jerlin priya 2014 oct. It revealed that majority of diabetic patient had adequate post test knowledge on various aspects with regard to meaning 30 (100%) and symptoms 16 (53.33%) and in prevention aspects majority of them 21 (70%) gained moderate level of knowledge.

**Table 4.2.3** explains mean knowledge score and standard deviation of experimental and control group in different aspects of foot care before intervention and level of significance. Before the intervention statistically there was no significant difference seen in mean knowledge score on different aspects of the foot care such as diabetic knowledge [‘t’ value 1.962($p<0.05$, df=58)], diabetic management [‘t’ value 0.595($p<0.05$, df = 58)], foot care [‘t’ value 0.921($p<0.05$, df=58)],foot risk assessment [‘t’ value 0.695($p<0.05$, df=58)]. Whereas, there was no significant difference in mean knowledge score in the aspects of diabetic knowledge, management, foot care, foot risk assessment in the experimental and control group before intervention.

The present study revealed that the control group had significantly higher knowledge with regard to diabetes knowledge than the experimental group before intervention. It may be due to the influence of mass media, magazines, newspaper or information from the health education program during their visit to hospital.

**Table:4.2.4** explains mean knowledge score and standard deviation of experimental and control group in different aspects of foot care on the 15$^{th}$ day after intervention and level of significance. On 15$^{th}$ day after the intervention statistically there was a significant difference seen in mean knowledge score on all the of the foot care such as diabetic knowledge [‘t’ value 8.762 ($p<0.05$, df=38)], diabetic management [‘t’ value 9.554 ($p<0.05$, df=38)], foot care [‘t’value10.681 ($p<0.05$, df=38)]. Foot risk assessment [‘t’ value 12.241($p<0.05$, df=38)]. Whereas, there was a

significant difference in mean knowledge score in the aspects of diabetic knowledge, management, foot care, foot risk assessment in the experimental and control group before intervention ['t' value 10.86($p<0.05$, df=58)] between the experimental and control group four aspect .

**Table 4.2.5-**explains mean knowledge score and standard deviation of experimental and control group in different aspects of foot care on the 30$^{th}$ day after intervention and level of significance. On 30$^{th}$ day after the intervention statistically there was a significant difference seen in mean knowledge score on different aspect of the foot care such as diabetic knowledge ['t' value 10.437($p<0.05$, df=38)], diabetic management ['t' value 11.768($p<0.05$, df=38)], foot care ['t' value 10.991($p<0.05$, df=38)].foot risk assessment ['t' value 13.991($p<0.05$, df=38)]. Whereas, there was a significant difference in mean knowledge score in the aspects of diabetic knowledge, management, foot care, foot risk assessment in the experimental and control group before intervention.

The present study revealed that, there was an increase in the level of knowledge regarding foot care in experimental group who received the instruction on the 30$^{th}$ day after intervention. The present study revealed that on the 30$^{th}$ day after intervention, the level of knowledge regarding foot care was further improved in experimental group. It also revealed that education can increase the level of knowledge in Diabetes patients.

**5.3 Level of practice of experimental and control group**

**Tables 4.3.1**,**4.3.2, 4.3.3, 4.3.4**, **4.3.5 and 4.3.6** explain the level of practice regarding Foot care before and after the intervention.

**Table 4.3.1** presents frequency and percentage of experimental and control group on overall practice before and after intervention. In experimental group all the samples 30 (100%) had fair level of practice before intervention. On the 15th day after intervention, all of samples 30 (100%) had good level of practice, control group 30(100%) had poor practice. On the 30th day all the samples 30(100%) had good practice level on foot care.

The present study revealed that, the level of practice was further increased in experimental group after the intervention, whereas in the control group there was no improvement in the level of practice on subsequent observations.

The finding of this study is consistent with findings of another study. A study on effectiveness of planned teaching programme on knowledge and practice of foot care for diabetic patients in selected hospital at Mangalore done by Mrs. Latha. S (2011) The data showed that maximum 30 (75%) numbered diabetic subjects scored between range of 0-33% (poor foot care practice)

This finding is congruent with that of chanym and Molassi who conducted a study to assess the relationship of diabetic knowledge and complication among Chinese, which reported that only 92 % of patient were knowledgeable and 60% of clients complied with foot care

**Table 4.3.2** explains overall mean practice score on foot care and standard deviation of experimental and control group before and after intervention and level of significance. The mean practice score between the experimental (48.57%) and control group (47.73%) showed a slight difference before intervention, after the 15$^{th}$ day of intervention mean score of experimental group (90.80%) was higher than the mean score of control group (50.20%), after the 30$^{th}$ day of intervention mean score of experimental group (92.56%) was higher than the mean score of control group (50.08%). So, the hypothesis (H2), there is a significant increase in the mean practice score on foot care in experimental group compared to control group after intervention was accepted.

**Table 4.3.3** explains mean practice score and standard deviation of experimental and control group in different aspects of foot care before intervention and level of significance. Before the intervention statistically there was a significant difference seen in mean practice score on different aspects of the foot care such as foot care practice for experimental 22.07(45.98%),control 25(52.08%) and Foot wear practice for experimental 20.20(51.79%),control 16.53(42.38%) Whereas, there was a significant difference in mean practice score in the aspect of foot care practice and foot wear practice in experimental and control group. The present study revealed that the control group had significantly higher level of practice with regard to foot care practice than the experimental group before intervention.

**Table 4.3.4** explains mean practice score and standard deviation of experimental and control group in different aspects of foot care on the 30th day after intervention and level of significance. On 15th day after the intervention statistically there was a significant difference seen in mean practice score on all the different aspects of the foot care such as foot care practice for experimental 44.47(92.64%),control 25.87(53.89%) and Foot wear practice for experimental 34.53(88.54%),control 17.80(45.64%) Whereas, there was a significant difference in mean practice score in the aspect of technique of foot care practice and foot wear practice in experimental and control group. The present study revealed that the level of practice regarding foot care was increased in experimental group who received the instruction on the 15$^{th}$ day after intervention.

**Table 4.3.5** explains mean practice score and standard deviation of experimental and control group in different aspects of foot care on the 15th day after intervention and level of significance. On 30$^{th}$ day after the intervention statistically there was a significant difference seen in mean practice score on different aspects of the foot care such as foot care practice for experimental 45.03(93.81%),control 26.07(54.31%) and Foot wear practice for experimental 35.5(91.02%),control 17.5(44.87%) Whereas, there was a significant difference in mean practice score in the aspect of technique of foot care practice and foot wear practice in experimental and control group. The present study revealed that the level of practice regarding foot care was increased in experimental group who received the instruction on the 30$^{th}$ day after intervention.

The finding of this study is consistent with findings of another study to assess the knowledge and practice regarding foot care among diabetes patients at krishna hospital, Karaddo ne by **Manisha C. Gholap And Vaishali R. Mohite 2013**.

It was reported that association between knowledge and practice regarding foot care among diabetes patients with selected demographic variable and find the co-relation between knowledge and practice regarding foot care among diabetic patients. The level of knowledge score of diabetic patients regarding foot care reveals that majority 29(58%) had average knowledge, 12(24%) had good knowledge and 9(18%) had poor knowledge. The level of practice score of diabetic patients regarding foot care reveals that majority 29(58%) had average practice, 11(22%) had good practice

and 10(20%) had poor practice. There was a perfect correlation between knowledge and practice regarding foot care among diabetic patients which means there is increase in knowledge with increase in practice of the patients.

### 5.4 Association of study variables with selected demographic variables

**Table 4.4.1** shows the association between the demographic variables and knowledge of foot care before intervention. The present study shows that there was no significant association between the age, gender, educational status, occupation, duration of diabetes, comorbid illness and the knowledge before intervention.

# SUMMARY, FINDINGS, CONCLUSION, IMPLICATION AND RECOMMENDATION

# CHAPTER VI

# 6. SUMMARY, FINDINGS, CONCLUSION, IMPLICATION AND RECOMMENDATIONS

## 6.1 SUMMARY OF THE STUDY

The study was done to assess the effect of foot care instruction on the knowledge and practice of foot care among adults with Type 2 Diabetes Mellitus. The conceptual framework of the study was based on the Modified Titler effectiveness model (2004) theory. A quasi experimental pre-test and post-test control group design was used. The independent variable was foot care instruction and dependent variables were knowledge and practice of foot care.

The study was conducted in selected community at Kanyakumari, Tamilnadu. The data was collected for 30 days. Purposive sampling technique was used for the selection of the samples. The total samples of the study consisted of 60 patients with Type 2 Diabetes Mellitus. The data was collected using a structured interview schedule, and self reported rating scale. The reliability of the interview schedule was tested by test-retest method, the rating scale is a standardized tool.

The data analysis and interpretation were done by using descriptive and inferential statistics.

## 6.2 SUMMARY OF THE FINDINGS

### 6. 2.1 Demographic characteristics of the sample.

The samples in the experimental group 26.7 % and in the control group 16.7% had Diabetes Mellitus for more than 10 years, remaining had diabetes mellitus for 2 to 10 years. In both groups most of the samples were aged between 56 - 65 years, almost were both the gender same educated and unemployed. Majority of the samples 73.3% in the experimental group and 76.7% in the control group were taking oral hypoglycaemic agents. Remaining in both the groups were taking only (13.3%) insulin, (13.3%) both. In both the experimental and control group, nearly half of samples 29(48.3%) had comorbid illness. In both the experimental and control group, nearly half of the samples 54(90%) were not smoking.

**Significant findings**

1) There was a significant difference between the overall mean knowledge score regarding foot care in experimental and control group after intervention.

2) There was an increase in overall mean practice score on foot care in the experimental compared to control group after the intervention.

3) There was no association between the selected demographic variables (age, gender, occupation, duration of diabetes and comorbid illness) and knowledge of foot care before intervention.

## 6.3 CONCLUSION

As the literature says that prevention is the only option to avoid the foot complications among people with diabetes mellitus, The findings of the study conclude that the foot care instruction with video demonstration had an effect on knowledge and practice of foot care among adults with Type 2 Diabetes Mellitus. It improved their knowledge and practice level of foot care and thereby ensuring the safety of the patients, minimizing the risk of complications and foot ulcer control.

## 6.4 IMPLICATIONS

The findings of the study will have implication for Nursing Education, Nursing Service, Nursing Administration and Nursing Research.

### 6. 4.1 Nursing practice

The findings of the study clearly stated that the majority of the diabetics have poor knowledge on foot care and fair level of foot care practices. Many of them had not received proper training or demonstration of foot care before intervention So the nurses should be more vigilant in educating the adults who are having diabetes mellitus to avoid the unwanted complications of losing the leg. The findings of the study can be disseminated to motivate nurses to educate and monitor diabetic patients practices of foot care. Plan and compliment foot care instruction in the in patient, out patient department, and community health center.

### 6. 4.2 Nursing education

The nursing staff and students should be taught about the importance of educating and supervising the patients during the foot care. The nurse educator should create awareness on foot care among diabetics and should supervise their foot care practices. It will improve the foot care, prevent loss of foot and improve the quality of life of these patients.

Nursing education should be strengthened to enable nursing students to know about current practices in foot care among patients with type 2 diabetes mellitus. Nursing curriculum should include clinical experience in conducting health teaching on foot care in various settings.

### 6. 4.3 Nursing administration

Nurse administrator should be active in organizing and coordinating training programs for the adults with Diabetes Mellitus. It should be ensured that the staff nurses are providing adequate instructions and guidance regarding foot care Special training programs can be organized for those who are in home settings through the hospital's community reach programs.

### 6. 4.4 Nursing Research

This is only an initial investigation to assess the effect of foot care. There is a need for intensive research in the area of adult's knowledge, preparedness and their physical compliance, diet, exercise, eye care and psychological stress in performance of foot care. The present study may motivate other investigators to conduct further studies.

### 6. 4.5 Recommendations

1. A similar study can be replicated on a sample with different demographic characteristis. An experimental study may be conducted using a larger population of the community.

2. Foot care education should be given periodically and a diary can be maintained for ensuring continuity in practice among patients with type 2 diabetes mellitus.

3. A comparative study can be done to identify the difference in foot self care behavior with and without foot problems among patients with diabetes mellitus.

4. A comparative study can be conducted to identify the differences in foot self-care behavior among patients with diabetes mellitus in the rural and urban settings

5. A study can be conducted among staff nurses to assess their knowledge regarding foot care.

6. An observational study can be conducted to assess the skills of self assessment of the foot among patients with diabetes mellitus.

# BIBLIOGRAPHY AND REFERENCES

# BIBILOGRAPHY

**BOOK REFERENCES:**


Alvin C (2005) Diabetes mellitus. Harrison T (edn) Principle of internal medicine(16th edn), New York. McGraw-Hill Companies: 830-835.

Andrew J.Krentz,Churchill's (2000) pocket book of *Diabetes*,Elsever sciencelimited , page no:213-220

Basavanthappa, B.T. (1998). *Nursing research.* 2nd ed. New Delhi: J.P Brothers medical publishers Pvt. Ltd.

Black and Hawks. (2005). Medical surgical nursing. 7th ed. Missouri: W.B Saunders, Pvt. Ltd.

Black, M. J. (2004). Medical surgical nursing. 7th ed. New Delhi: Saunders.

Burns and grove. (2002). *Understanding nursing research*. 3rd ed. New Delhi:Harcourt private. Ltd.

Clark, M. (2004). *Physical activity efficacy and effectiveness among men and women diabetes care*. 7th ed. New Delhi: Lippincott publications.

Dewit, C. (2001). *Fundamental concepts and skills for nursing*. 3rd ed. Missouri:Elseviers.

Gaylene, B and Patricia, B. (2000). *Delmar's fundamental and advanced nursing skills*. 3rd ed. Canada: Delmar.

Kader, P. (2006). *Nursing research principles, process and issues*. 2nd ed. New York: Palgrave Macmillan.

Klein, R. (2009). *Complication in diabetics*. 1st ed. New Delhi: Lippincott Publication. Susan, D. (1988).

Lewis and Heitkemper. (2008). *Medical surgical nursing*. 7th ed. Missouri: Mosby publication.

Mills, E. (2006). *Lippincott manual of nursing practice*. 8th ed. Noida: Jaypee

Pilot and Hungler. (2000) *Nursing Research Principles and methods*. Fifth edition. Newyork: j. B Lippincott company.

Potter, P.A and Perry A.G. (2007). *Fundamentals of nursing*. 6th ed. Missouri: Mosby.

Smeltzer and Bren. (2008). *Medical surgical nursing.* 11th ed. Philadelphia. J.B.Lippincott company.

Swarnakar, K. (2002). *Nursing practice and procedures*. 1st ed. Indore: N R Brothers publication.

**JOURNAL REFEENCES**

A.D.A.M, INC. (2004) Diabetes health center, foot care. *Diabetes health center*; (diabetes health center report)

A.P.Kumara samy,(2014 Number) Foot care management, *Nightingle nursing times*,volume 9, no:10.

Armstrong DG, et al. (2005 March – April) cooling the foot to prevent diabetic foot wounds: a proof of concept trial, *JA podiatric med Assoc*. 95(2): 103-7.

Attaining the nine global non communicable diseases targets; a shared responsibility" September 2003 Volume 48 Issue 3

Batista F, Pinzur MS, (2005 Jan) Disease knowledge in patients attending diabetic foot clinic. *Foot ankle Int.;* 26(1): 38-41.

Bell RA, et al (2005,Jan – Feb)diabetes foot self-care practices in a rural triethnic population diabetes education; 31 (1): 75-83.

Bethaasela. (2000 November)Putting feet first to prevent amputation is the focus of world diabetes day 2005; APMA and NDEP join forces to promote foot care and prevent amputation among people with diabetes. *Solomon star News paper* 9; Section A: 1 (col 4).

Cynthia frits chi. (2001 june) Preventive care of the diabetic foot. *Nursing clinics of North Americ*a.36 (2) 302-303.

Donohoe M E, et al (2005Aug) improving foot care for people with diabetes a randomized controlled trial of an integrate care approach, *Diabetic Med* (8):581-7.

Dr. Aggarwal K K (2002-2003 March) preventing the diabetic foot. *The Asian journal of diabetology* 5 (3) 6-7.

Dr. Leafasia, (2005; June) Diabetic foot ulcers, Amputation is preventable: Early actions fight diabetes, knight ridder new papers 2005 November 15: section B (Col 6). Neelam Makol, Demystifying Diabetes. *Health Action*

Faculty of medicine (US). (2004)Diabetic foot learning issues. Toronto: *the university of Toronto*;.3 of 3.

Higgins KR, Lanctot DR, et al (2005 July) Home monitoring of foot skin temperature to prevent ulceration *Erid based Nurs*.; 8(3):80.

International Diabetes Federation (2012) The Global Burden. *IDF Diabetes* Atlas Fifth Edition.

J.M.Jerlin Priya, (2014 Oct) Preventing diabetic foot ulcer among diabetic patient, *Nightingle nursing times*, volume 10, no:12.

Johnson M, (2005; December) meeting the educational needs of people at risk of diabetes related amputation: a vignetic study with patients and professionals. *Health Expect*, 8(4): 324-33.

Johnson M,et al. (2005 Dec) meeting the educational needs of people at risk of diabetes related amputation. *Health Expect*;(4): 324-333.

Kaur K, (1998; August) I knowledge and self care practices of diabetic in a resettlement colony of Chandigarh, *Indian J med Sci* 52(8): 341-7.

Latha, (2011 Number ) Foot care among foot care, *Nightingle nursing* times,volume 6, no:12.

Lavery LA.et al, (2005 Oct) Disease management of the diabetic foot effectiveness of a diabetic foot prevention program to reduce amputations and

hospitalizations. *Diabetes Res clin pract*; 70(1): 31-7.

Leung PC (2007) Diabetic foot ulcers South Ethiopia. a joint publication of the *International Diabetes Federation*.

Malgrange D, et al (2003June) screening diabetic patients at risk for fools ulceration. A multicentre hospital based study in France. *Diabetes meta*: 29(3): 261

Matwa P, et (2003 May) alexperiences and guidelines for foot care practices of patients with diabetes mellitus. 26 (1): 11-21.

Morbach S, et al (2004; Jan) Regional differences in risk factors and clinical presentation of diabetic foot lesions. *Diabetic Med*. 21(1): 91-5.

Nalini singh,et al (2005 January). Preventing foot ulcers in-patient with Diabetes. *Jama* 12: 293(2): 217-288.

Neders, Nadash p. (2003 Dec) individualized education can improve foot care4 for patients with Diabetes. *Home Health Nurse*; 21(12): 837-840.

Pollock R D, unwin N C, Connolly N knowledge and practice of foot care in people with diabetes (Science direct) 2004 May 64 (2) 117-122.

Pullock R D, (2002)Management diabetic foot disease: Epidemiology of risk factors 2002: (guidelines 55) *Journal of Indian Medical Association*.

R.Tamil selvi, (2014 March) Foot self care behavior of patient with diabetes mellitus, Nightingle nursing times, volume 9, no:12.

Reiber GE, Boyko E, Smith DG (1995) Lower extremity ulcers and amputations in individuals with diabetes. In Diabetes in America (2nd edn), Harris MI (ed.), *National Institutes of Health Publication* No. 95-1468.

Valk GD, et al (2002 sep), patient education for preventing foot ulceration. *Endocrine metab clin North AM*; 31(3): 633-658.

Vileikyte L (2001) Diabetic foot ulcers: a quality of life issue. *Diabetes Metab Res Rev* 17: 246-249.

Vinaya A S, (2003 March 5)diabetic foot: the next great Indian epidemic, Deccan Herald 200 November 14; Section A: 3 (col 1) III. Cullet on John L.

Preventing Diabetic foot complications. *The Asian journal of diabetology*; (3) 6-7.

Vishwanathan V, et al, (2005 may) amputation prevention initiative in South India: Positive impact of foot careeducation. *Diabetes care* 28:(5): 1019-21.

Viswanathan (2004 July) High prevalence of potential foot problems in India: foot wear for. Indian diabetics. *The Hindu news paper* 1: sect B URL:

ViswanathanV, et al (2002.august)A, et. Al. Profile of dabetic foot complications and its associated complication-A multicentric study from India. J *Assoc physician ns India* 5: 1013-6.

World Health Organization,(2014) Global status report on non communicable disease,

**ONLINE REFRERENCES**

Bidlack, W. (2009). Diabetes Management Measures. Retrieved on January 16, 2010, from http://www.accessmylibrary.com

Leona,V. (2007). Patients' Knowledge on Diabetes Self-Care. Retrieved on January 21, 2010, from http:// www.diabetesselfmanagement.com

Leung, s. (2004). Guidelines for Nurses on Management of Hyperglycemia. Retrieved on September 18, 2006, from http://www.idf.org

Diabetic Mellitus consuming more than $1 billion in health care annually.1999 February: 99(2) 26-27 http://www.nursingcenter.com

Meltzer, S. (2006). Diabetes Management and Prevention. Retrieved on November 08, 2008, from http://www.diabetesnet.

Michael S, Pinzur, Diabetic Foot; diabetic foot ulcer (DFUS) precede 85% of non-traumatic Lower extremity amputation (LEAS) 2004 June 2; Section 2 of 9 1-16. http://www.emedicine.com/orthoped/topic387htm

# APPENDICES

## APPENDIX – 1

## LETTER REQUESTING PERMISSION TO CONDUCT THE STUDY

To

Fr.J.Arul Anand,

Church of St.Francis Xavier

Alanchy,K.K.Dist.

Tami Nadu.

Respected fr.

**Sub:** Letter requesting permission for conducting the study.

301310501 is a post graduate nursing student of our institution. He has selected the below mentioned topic for his research project to be submitted to Dr.MGR Medical University of Health Science as a partial fulfillment of Master Nursing degree.

**"A study to assess the effectiveness of foot care instruction on knowledge and practice among diabetic patients in a selected community at kanyakumarai Dt, Tamilnadu".**

Regarding this project, he is in need of your help and co-operation as he is interested in conducting a study of his project in your municipal areas. I request you to kindly permit him to conduct the proposed study.

The student will furnish further details of the study if required personally. Please do the needful and oblige.

Thanking You

Yours Faithfully,

Place:

Date: Principal

Fr. ARULANAND J.
Parish Priest

CHURCH OF
ST. FRANCIS XAVIER
Alenchy - 629 159
Palapallam, K.K.District.
Tel: 04651-254002 Mob: 094866 79767

# TO WHOM IT MAY CONCERN

17/08/2014

**Sri. Anil Vince** Msc Nursing student of RVS College of Nursing / Sulur/ Coimbatore has permitted to perform a research study in my parish/ Alanchi and also the surrounding areas.

Fr. Arul Anand.J

Parish Priest
St. Xavier's Church
Alanchy 629 159
Kanyakumari Dist.

**Parish Priest**

**Church of Our Lady of Fathima**
Kandarvilagam, Vaniyakudy - 629 251
Kanyakumari Dist, South India.
Tel : 04651 - 228707

Date: 19-08-2014

## TO WHOM IT MAY CONCERN

**Sri. Anil Vince** Msc Nursing student of RVS College of Nursing / Sulur/ Coimbatore has permitted to perform a research study in my parish/ Kandervillagam and also the surrounding areas.

**Fr. Andrew.D**

OUR LADY OF FATHIMA CHURCH
DIOCESE OF KOTTAR
KANDERVILAGAM

## APPENDIX – 2

## REQUISITION LETTER FOR CONTENT VALIDITY

From

301310501

M.Sc (N) Student,

RVS College of Nursing,

Sulur, Coimbatore- 641402

To

Through the principal

Respected Sir/Madam

**Sub : Letter requesting opinion and suggestion of experts for establishing content validity of the tool.**

I am a M.Sc (N) student in RVS College of Nursing, Sulur, Coimbatore in the specialty Medical Surgical Nursing. As per the requirement for the partial fulfillment of this nursing degree under the Tamil Nadu Dr. MGR Medical University, I have selected the following topic for dissertation**: "A study to assess the effectiveness of foot care instruction on knowledge and practice among diabetic patients in a selected community at Kanyakumarai District, Tamil Nadu."**

I kindly request you to go through the research tool and validate against criteria given in the sheet.

Thanking you

Yours faithfully

Enclosures

301310501

1. Statement of the problem
2. Objectives and hypothesis of the study
3. Research tool
4. Criteria rating for validation
5. Content validation certificate.

## APPENDIX – 3

## CERTIFICATE OF CONTENT VALIDITY

This is to certify that the tool has been developed by 301310501, II year M.Sc (Nursing)., student, of R.V.S. College of Nursing, Sulur, Coimbatore to collect data on the problem.

**"A study to assess the effectiveness of foot care instruction on knowledge and practice among diabetic patients in a selected community at Kanyakumarai District, Tamil Nadu**". is validated by the undersigned and he can proceed with this tool to conduct the main study.

**Name and Address :**

**Signature :**

**Seal :**

**Date :**

## CERTIFICATE OF CONTENT VALIDITY

This is to certify that the tool has been developed by 301310501, II year M.Sc (Nursing)., student, of R.V.S. College of Nursing, Sulur, Coimbatore to collect data on the problem. **".A study to assess the effectiveness of foot care instruction on knowledge and practice among diabetic patients in a selected community at kanyakumarai Dt"**. Is validated by the undersigned and she can proceed with this tool to conduct the main study.

**Name and Address** : Dr. C. Muralidharan
Vijaya clinic, Diabetic care centre
Dindigul Diabetic Education & Research center
22/26, chatram street
Dindigul - 624 001

**Signature** :

**Seal** :

Dr. C. MURALIDHARAN
M.B.B.S., Gr. Dip. Diab., (Australia),
E.C. Member RSSDI Tamil Nadu Chapter
Vijaya Clinic - Diabetes Care Centre
Dindigul Diabetic Education & Research Centre
22/26, Chatram Street
DINDIGUL - 624 001

**Date** : 13/08/2014

## CERTIFICATE OF CONTENT VALIDITY

This is to certify that the tool has been developed by 301310501, II year M.Sc (Nursing)., student, of R.V.S. College of Nursing, Sulur, Coimbatore to collect data on the problem.

**".A study to assess the effectiveness of foot care instruction on knowledge and practice among diabetic patients in a selected community at kanyakumarai Dt"**. Is validated by the undersigned and she can proceed with this tool to conduct the main study.

**Name and Address** : Dr. P.N. SOMESHWARA RAO.

**Signature** :

**Seal** : Dr. P.N. SOMESHWARA RAO
MBBS (M.S GEN. SURGERY) MRCS U.K
Regd. Medical Practioner
Regd No. 71474

**Date** :

**CERTIFICATE OF CONTENT VALIDITY**

This is to certify that the tool has been developed by 301310501, II year M.Sc (Nursing)., student, of R.V.S. College of Nursing, Sulur, Coimbatore to collect data on the problem.

**".A study to assess the effectiveness of foot care instruction on knowledge and practice among diabetic patients in a selected community at kanyakumarai Dt**". Is validated by the undersigned and she can proceed with this tool to conduct the main study.

**Name and Address** : Dr. Elangomuniappan, M.D.
Senior civil surgen
(Gr. H. DINDIGUL)
47, Kutcheri Street
Dindigul.

**Signature** :

**Seal** :
Dr. ELANGO MUNIAPPAN, M.D.,
Senior Civil Surgeon
(G.H. DINDIGUL)
Reg.No. 39327
47, Kutcheri Street, DINDIGUL.

**Date** : 13/08/2014

## CERTIFICATE OF CONTENT VALIDITY

This is to certify that the tool has been developed by 301310501, II year M.Sc (Nursing)., student, of R.V.S. College of Nursing, Sulur, Coimbatore to collect data on the problem.

**".A study to assess the effectiveness of foot care instruction on knowledge and practice among diabetic patients in a selected community at kanyakumarai Dt"**. Is validated by the undersigned and she can proceed with this tool to conduct the main study.

**Name and Address** : K. Balasupramanian
KMCH College of Nursing
Coimbatore - 14.

**Signature** : K. Balasubramanian.

**Seal** :


**Date** : 2/9/14

## CERTIFICATE OF CONTENT VALIDITY

This is to certify that the tool has been developed by 301310501, II year M.Sc (Nursing)., student, of R.V.S. College of Nursing, Sulur, Coimbatore to collect data on the problem.

**".A study to assess the effectiveness of foot care instruction on knowledge and practice among diabetic patients in a selected community at kanyakumarai Dt".** Is validated by the undersigned and she can proceed with this tool to conduct the main study.

**Name and Address** : P. KUZHANTHAIVEL
PROFESSOR,
KMCH COLLEGE OF NURSING
POST BOX: 3209, AVANASHI ROAD,
COIMBATORE-641014.

**Signature** : P. Kuzhanthaivel

**Seal** :


**Date** : 02.09.2014

## APPENDIX – 4

## CRITERIA RATING SCALE FOR VALIDATION

**INSTRUCTION**

The expert is requested to go through the following criteria for evaluation of check list. Three columns are given for response and a column for remarks. Kindly place a tick mark in the appropriate column and give remarks.

**INTERPRETATION OF COLUMNS**

Columns I - Meets the criteria

Columns II - Partly meets the criteria

Columns III - Does not meet the criteria

| S.No | Criteria | I | II | III | Remarks |
|---|---|---|---|---|---|
| 1. | **Scoring**<br>- Appropriateness<br>- Adequacy<br>- Accurateness<br>- Clarity<br>- Simplicity | | | | |
| 2. | **Content**<br>- Organization<br>a. Logical Sequence<br>b. Continuity<br>- Adequacy<br>- Appropriateness<br>- Relevance | | | | |
| 3. | **Language**<br>- Appropriateness<br>- Clarity<br>- Simplicity<br>- Concise<br>- Precision | | | | |
| 4. | **Practicability**<br>- Is it easy to score<br>- Does it precisely measure the skill<br>- Utility | | | | |

Any other Suggestions

……

..……

**Signature :**

**Name, Designation :**

**Address :**

## LIST OF EXPERTS

**Medical experts**

**1.Dr.C.Muralidharan,Gr.Dip.Diab.(Australia)**
E.C.Member RASSDI Tamil Nadu Chapter
Vijaya Clinic - Diabetic Care Center
Dindigul Diabetic Education & Research Center
22/26, Chatram Stareet,Dindigul.

**2.Dr.P.N.Someshwara Rao MS, MRCS (Edin), FPS**.
Consultant podiatric surgeon ,Diabetic foot specialist
Dr.Somesh Diabetic Foot Clinic,55,Vellala st,
Purasawalkam,Chennai.

**3.Dr.Elango Muniappan,MD**
Senior Civil Surgen,(G.H.DINDGUL)
47,Kutcheri Street,Dindgul.

**Nursing Experts**

**4.Mr.K.Balasubramanian,M.Sc.(N)**
Professer,KMCH College of Nursing,
Coimbatore.
**5. Mr.P.Kuzhanthaivel,M.Sc.(N)**
Professer,KMCH College of Nursing,
Coimbatore

## APPENDIX – 5

## RESEARCH TOOL

## STRUCTURED INTERVIEW SCHEDULE

**Introduction**

The burden of Diabetic Foot Ulcers among diabetic's is increasing in India. This study intended to assess the knowledge and practice of foot care among diabetic patient.

**Purpose**

The purpose of this questionnaire is to find out the knowledge and practice of foot care.

**Instructions**

1. Kindly select your responses to the below asked questions.
2. Tick the correct answer.
3. Your answer will be kept confidential.

## SECTION-A

## DEMOGRAPHIC DATA

**INSTRUCTION:** Kindly go through the following questions and put a tick mark (✓) corresponding to the appropriate option in each question.

1.Sample No:

2. Age

a. 35-45yrs b. 46-55yrs

b. 56-65yrs d. >65 yrs

3. Gender

a. Male b. Female

4. Marital status

a. Married b. Unmarried

b. Widow/widower d. Separated

5. Educational status

a. No schooling b. Primary education

b. Secondary education d. Collegiate education

6. Occupational status

a. Farmers b. Labourer

b. Private employee d. Government employee

c. Unemployed

7. Religion

a. Hindu b. Christian

b. Muslim d. Others

8.History of diabetes mellitus ?

a. 2-4years b. 5-7years

c.8-10years d .>10years

9. Detail of diabetes treatment?

a .Oral hypoglycaemic agent b. Insulin

c. Both a & b

10) (a) Presence of comorbid illness Yes ☐ No ☐

(b) If yes mention them.....,.....

11)Do you have smoking habit? Yes ☐ No ☐

12)What was your last blood glucose level …….

13) What was your last urine test result…….

14) Did you check Hb A**1**C, Yes ☐ No ☐

mention the result…….

## SECTION-B

### *Knowledge questionnaire*

1. Pain tingling and burning sensation in foot are symptoms of

   i) Injury to the bone ii) Circulation failure of the foot

   iii) Muscular injury to the foot iv) Nerve damage of the foot

2. Cold feet occurs due to

   i) Less blood circulation ii) Injury to the foot

   iii) Loss of sensation to feet iv) Increased blood circulation

3. While washing the feet the water should be

   i) Hot ii) Luke Warm

   iii) Cold iv) Ice Cold

4. While washing the feet the diabetic person should give more attention to

   i) Heel ii) Legs

   iii) Nails iv) Between the toes

5. Diabetic patient should cut the nails in

   i) Angle ii) Round Shape

   iii) Straight way iv) Never cut

6. Diabetic patient should keep the feet skin

   i) Dry and soft ii) Moist and soft

   iii) Dry and hard iv) Moist

7. How often a diabetic patient must have his feet examined by the doctor?

   i) Once a year ii) Twice a year

   iii) Weekly iv) Monthly

8. A diabetic patient should inspect the feet daily for

i) Crack and blister

ii) Cleanliness

iii) Crack and blister and colour changes

iv) Complexion

9. To lubricate the foot the diabetic patient should use

i) Olive oil ii) Vaseline

iii) Mineral oil iv) Coconut oil

10. Diabetic person should do foot exercise

i) Once a day ii) Twice a day

iii) Three times a day iv) Weekly once

11. A good exercise for the feet with less sensation is

i) Jogging ii) Running

iii) Cycling iv) Brisk Walking

12. Diabetic persons should wear

i) Well fitting shoes ii) Slippers

iii) High heels iv) Flat slipper

13. The precautionary measure while taking foot care is to

i) Use tight fitting shoes

ii) Remove corn by yourself with blade

iii) Use hot water bag to warm the leg

iv) Avoid walking with bare foot

14. Diabetic person should not sit with the legs

i) Straight ii) Raised

iii) Flat iv) Crossed

15) Which of the following part of the leg is prone to fungal infection?

i) Sole of the foot ii) Between the fingers of foot

iii) Nail iv) Ankle joint of foot

16) Which of the following pulses are checked while examining the foot?

i) Darsalis pedis & posterior tibial ii) Radial & ulnar pulse

iii) Femoral pulse iv) Bracheal pulse

17) During the foot examination if you find a blister what will you do?

i) Self care ii) Consult with doctor

iii) Consult with diabetologist iv) Consult with podiatrist

18) A person with diabetes who has foot ulcer should be advised to see a doctor if it does not heal?

i) In a month ii) In a weak

iii) In three days iv) Immediately

19)What is the common causes for diabetic foot ulcer?

i)Trauma ii)Injury

iii)Unfitting shoes iv)All of the above

20)What are the benefits of regular exercise in the management of diabetes ?

i) exercise increase the blood glucose level and body weight

ii) exercise lower the blood glucose level and body weight, increase blood circulation

iii) exercise lower the blood glucose level and increase body weight

iv) exercise increase the blood glucose level and decrease body weight

| **Score** | **Grading** |
|---|---|
| 14 to 20 | Good |
| 7 to 13 | Average |
| 0 to 6 | Poor |

We would like to know what you do to look after your feet, please tick the category which best reflects what you actually do. Please answer every question. Thank you.

1 .Do you examine your feet?

(a)More than once a day (b)Once a day (c)4-6 times a week (d)Once a week or less

2. Do you check your shoes before you put them on?

(a)Often (b)Sometimes (c)Rarely (d)Never

3. Do you check your shoes when you take them off?

(a)Often (b)Sometimes (c)Rarely (d)Never

4. Do you wash your feet?

(a)More than once a day (b)Once a day (c)Most days a week (d)Few days a week

5. Do you check your feet after washing?

(a)Often (b)Sometimes (c)Rarely (d)Never

6. Do you dry between your toes?

(a)Always (b)Often (c)sometimes (d)Rarely/Often

7. Do you use moisturising cream on your feet?

(a)Daily (b)Once a week (c)About once a month (d)Never

8. Do you put moisturising cream between your toes?

(a)Daily (b)About once a month (c)About once a week (d)Never

9. Are your toe nails out?

(a) About once a week (b)About once a month (c)Les than once a month (d)Never

10. Do you wear sandals?

(a)Most of the time (b)Sometimes (c)Rarely (d)Never

11.Do you wear slippers?

(a)Most of the time (b)Sometimes (c)Rarely (d)Never

12 .Do you wear trainers?

(a)Most of the time (b)Sometimes (c)Rarely (d)Never

13. Do you wear lace-up shoes?

(a)Most of the time (b)Sometimes (c)Rarely (d)Never

14. Do you wear pointed-toed shoes?

(a)Most of the time (b)Sometimes (c)Rarely (d)Never

15. Do you wear flip-flops?

(a)Most of the time (b)Sometimes (c)Rarely (d)Never

16. Do you break in new shoes gradually?

(a)Always (b)Most of the times (c)sometimes (d)Rarely/Never

17. Do you wear artificial fiber (eg.nylon shocks)?

(a)Always (b)Most of the times (c)sometimes (d)Rarely/Never

18. Do you wear sleeveless socks/stockings/tights?

(a)Often (b)sometimes (c)rarely (d)Never

19. Do you wear shoes without shocks/stockings/tights?

(a)Never (b)Rarely (c)Sometimes (d)Often

20. Do you change your shocks/stockings/tights?

(a)More than once a day (b)Daily (c) 4-6 times a week (d)Less to 4 times a weak

21. Do you walk around the house in bare feet?

(a)Often (b)Sometimes (c)Rarely (d)Never

22.Do you walk outside in bare feet?

(a)Often (b)Sometimes (c)Rarely (d)Never

23. Do you use a hot water bottle in bed?

(a)Often (b)Sometimes (c)Rarely (d)Never

24. Do you put your feet near the fire?

(a)Often (b)Sometimes (c)Rarely (d)Never

25. Do you put your feet on a radiator?

(a)Often (b)Sometimes (c)Rarely (d)Never

26. Do you use a bath thermometer?

(a)Often (b)Sometimes (c)Rarely (d)Never

27. Do you use a corn remedies/corn plaster/paints when you get a corn?

(a)Never (b)Rarely (c)Sometime (d)Often

28. Do you put dry dressing on a blister when you get one?

(a)Never (b)Rarely (c) Sometime (d)Often

29. Do you put a dry dressing on a graze, cut or burn when you get one

(a)Never (b)Rarely (c)Sometime (d)Often

**APPENDIX – 6**

# Muha;r;rpf;fUtp

Nfs;tpj;jhs;

**mwpKfk**:;

,e;jpahtpy; rh;f;fiu Nehahspfs; kj;jpapy; rh;f;fiu Neha; ghjg; Gz;fs; nghpa Rikia Vw;gLj;Jfpd;wd. ,e;j Ma;tpd; Nehf;fk; rh;f;fiu Nehahspf;F cjTk; tifapy; ghj guhkhpg;G mwpT> ghj guhkhpg;gpd; eilKiwia kjpg;gpLjy; MFk;.

**Nehf;fk;:**

,e;j Nfs;tpj;jhspd; Nehf;fk;> ghjg;guhkhpg;G> mwpT kw;Wk; eilKiwia fz;Lgpbj;jy; MFk;.

**topKiwfs;:**

1. jaT nra;J Nfl;fg;gLk; Nfs;tpfSf;F fPNo cs;s rupahd gjpy;fis Njh;e;njLf;fTk;
2. rhpahd gjpy;fis milahsk; fz;L bf; nra;aTk;
3. cq;fs; gjpy; ufrpakhf itf;fg;gLk;.

## gphpT - m
### kf;fs; njhlh;ghd jfty;fs;

**Fwpg;G:**

gpd;tUk; tpdhf;fis thrpj;J rhpahd tpilfis Njh;e;njLf;fTk;

1. khjphp vz;

2. taJ

1) 36-45 taJ 2) 46-55 taJ

3) 56-65 taJ 4) >65 taJ

3. ghypdk;

1) Mz; 2) ngz;

4. jpUkzk; gw;wp;a tptuk;

1) jpUkzkhdth; 2) jpUkzkhfhjth;

3) tpjit 4) jdpikahf tho;gth;

5. fy;tpj;jFjp

1) gs;sp; gbf;fjth; 2)njhlf;fg;gs;sp gapd;wth;

3) Nky;epiyg;gs;sp gapd;wth; 4)fy;Y}hpg;gbg;G gapd;wth;

6. Ntiy

1) tptrhap 2) $yp 3) jdpahh; Ntiy

4) muR Ntiy 5) Ntiy ,y;yhjth;

7. rkak;

1) ,e;J 2) fpwp];jtk;

3) K];yPk; 4) kw;w rkaj;jth;

8. rh;f;fiu Nehapd; tuyhW

1) 2-4 tUlk; 2) 5-7 tUlk;

3) 8-10 tUlk; 4) > 10 tUlk;

9. rh;f;fiu Nehapd; kUj;Jtf; Fwpg;G

1) tha; topNa kUe;J vLg;gJ 2) ,d;Rypd; Crp

3) ,uz;Lk; 1 & 2

10. (1) kw;w Neha; jhf;Fjy; cs;sjh? Mk; ☐ ☐

(2) ;vjhtJ Neha;fs; ,Ue;jhy; Fwpg;gplTk; ……..

11. ePq;fs; Gif gpbg;gtuh? Mk; ☐,y;iy ☐

12. cq;fSf;F filrpahf ,uj;jj;jpy; rh;f;fiuapd; msT vt;tsT……..

13. cq;fSila rpWePh; ghpNrhjidapy; filrpahf rh;f;fiuapd; msT vt;tsT? ……

14. ePq;fs; HbA1C ghpNrhjid nra;jpUf;fpwPh;fsh?

Mk; ,y;iy ☐ ☐

## gphpT – M

1. cq;fs; ghjq;fspy; typ> vhpr;ry;> kjkjg;G Mfpait vjw;fhd mwpFwpfs;?

   1) vYk;G KwpT  2) fhYf;F ,uj;j Xl;lk; FiwT

   3) fhy; rijapy; fhak;  4) fhy; euk;G Nrjk;

2. fhy; Fsph;r;rpahf ,Ug;gjw;F fhuzk;

   1) Fiwe;j ,uj;j Xl;lk;  2) fhypy; Vw;gLk; fhak;

   3) Fiwe;j ghj czh;r;rp  4) mjpf ,uj;j Xl;lk;

3. fhy; fOTk; NghJ fz;bg;ghf jz;zPh; ve;j epiyapy; ,Uf;f Ntz;Lk;?

   1) #lhf  2) ,sQ;#lhf

   3) Fspuhf  4) kpfTk; Fsph;r;rpahf

4. fhy;fis fOTk; NghJ rh;f;fiu Nehahsp vjw;F kpfTk; Kf;fpaj;Jtk; juNtz;Lk;

   1) ghjj;jpw;F  2) fhy;fSf;F

   3) efj;jpw;F  4) fhy; tpuy;fSf;F

5. rh;f;fiu Nehahsp vt;thW efq;fis ntl;l Ntz;Lk;

   1) $h;Kidahf  2) miutl;l tbtpy;

   3) Neuhf  4) efk; ntl;Ltjpy;iy

6. rh;f;fiu Nehahsp fhy; Njhy;fis vt;thW itj;jpUf;f Ntz;Lk;

1)twz;l kw;Wk; nkd;ikahd 2) <ukhd kw;Wk; nkd;ikahd

3) cyh; kw;Wk; fbd 4) <ukhd

7. vj;jid ehl;fSf;F xUKiw rh;f;fiu Nehahsp ghjg;ghpNrhjid kUj;Jtuhy; nra;ag;gl Ntz;Lk;

1) tUlj;jpw;F xUKiw 2) tUlj;jpw;F ,UKiw

3) khjj;jpw;F xUKiw 4) thuj;jpw;F xUKiw

8. rh;f;fiu Nehahsp vjw;fhf ghjq;fis jpdKk; ghh;itapl Ntz;Lk;

1) ghjntbg;G kw;Wk; nfhg;gsq;fs;

2) Rj;jkhf ,Uf;fpwjh

3) ghjntbg;G> nfhg;gsq;fs;> fhypy; epwkhw;wk;

4) rpf;fyhd epiy

9. fhy;fis <ugg;jkhf itj;jpUf;f vtw;iw gad;gLj;j Ntz;Lk;

1) xypt vz;nza; 2) th];ypd;

3) Rj;jpfhpf;fg;gl;l vz;nza ; 4) Njq;fha; vz;nza;

10. rh;f;fiu Nehahsp vj;jid ehl;fSf;F xUKiw ghjg;gapw;rp nra;a Ntz;Lk;

1) jpdKk; 2) ,uz;L ehl;fSf;F xUKiw

3) %d;W ehl;fSf;F xUKiw 4) thuj;jpw;F xUKiw

11. ghj czh;r;rp Fiwthf ,Ug;gth;fSf;F gpd;tUgtw;wpy; vJ rpwe;j clw;gapw;rp

1) nkJthf XLjy; 2) XLtJ

3) kpjptz;b Xl;Ljy; 4) tpiuthf elg;gJ

12. rh;f;fiu Nehahsp ve;jtpjkhd fhyzpfis mzpa Ntz;Lk;

1) rhpahf nghUe;Jk; fhyzp 2) nrUg;G

3) ghjk; cah;thd 4) rkepiy nrUg;G

13. Kd;ndr;rhpf;if eltbf;ifahf ghjguhkhpg;Gf;F vd;d nra;a Ntz;Lk;

1) ,Wf;fkhd fhyzpfis mzptJ

2) fhy; Mzpfis fj;jpahy; mfw;WtJ

3) fhypy; #Nlw;Wtjw;F RLePh; igia gad;gLj;Jjy;

4) ntWk; fhYld; elg;gJ

14. rh;f;fiu Nehahsp vt;thW cl;fhuf; $lhJ

1) fhy;fis Neuhf

2) fhy;fis cah;j;jp

3) fhy;fis rhprkkhf

4) fhy; Nky; fhy; FWf;Nf itg;gJ

15. gpd;tUtdtw;wpy; ve;jg;gFjp mjpfkhf G+Q;ir jhf;FjYf;F tha;g;Gfs; mjpfk;

1) fhy; ghjq;fSf;F mbapy; 2)fhy; tpuy;fSf;fpilapy;

3) efq;fs; 4) fZf;fhy; %l;Lg;gFjp

16. ghjg;ghpNrhjid nra;Ak; NghJ ve;nje;j ehbj;Jbg;Gfis ghpNrhjid nra;a Ntz;Lk;

1) fZf;fhy; Kd;gf;fk;> gpd;gf;fk; 2) kzpf;fl;L Jbg;G

3) njhilr;rhh;e;j Jbg;G 4) if%l;L Jbg;G

17. ePq;fs; ghjg;ghpNrhjid nra;Ak; NghJ cq;fs; fhy;fspy;

nfhg;Gsq;fs; Njhd;wpdhy; vd;d nra;tPh;fs;

1) ehNd guhkhpg;Ngd;

2) kUj;Jth; MNyhrid Nfl;Ngd;

3) rh;f;fiu Neha; kUj;Jthplk; MNyhridf; Nfl;gJ

4) ghjguhkhpg;G kUj;Jthplk; MNyhridf; Nfl;gJ

18. rh;f;fiu Nehahspapd; fhypy; fhak; Vw;gl;lhy; vj;jid ehl;fspy; kUj;Jtiu mZFtJ

1) xU khjj;jpy; 2) xU thuj;jpy;

3) %d;W ehl;fspy; 4) cldbahf

19. rh;f;fiu Nehahspapd; fhypy; fhak; tUtjw;fhd fhuzk; vd;d

1) fhypy; fhak; Vw;gLtJ

2) tpgj;Jf;fspdhy; fhak; Vwg;gLtJ

3) fhyzpfshhy; fhak; Vw;gLtJ

4) Nkw;$wpait midj;Jk;

20. jpdKk; clw;gapw;rp nra;tjhy; Vw;gLk; gad;fs;

1. ,uj;jj;jpy; rh;f;fiuapd; msitAk;> cly; viliaAk;

mjpfg;gLj;JfpwJ

2. ,uj;jj;jpy; rh;f;fiu msT> cly; vilia Fiwf;fpwJ.

,uj;j Xl;lj;ij Fiwf;fpwJ.

3. ,uj;jj;jpy; rh;f;fiuapd; msit Fiwf;fpwJ.

cly; vilia mjpfhpf;fpwJ

4. ,uj;jj;jpy; rh;f;fiuapd; msitAk;> cly; viliaAk; Fiwf;fpwJ

| Score | Grading |
|---|---|
| 14 to 20 | Good |
| 7 to 13 | Average |
| 0 to 6 | Poor |

## gphpT -,

**ePq;fs; cq;fs; ghjq;fis vg;gb guhkhpf;fpwPh;fs; vd mwpa tpUk;GfpNwd;. jaT nra;J ,tw;wpy; vtw;iw rhpahf nra;fpwPh;fs; vd;W rhpahf bf; nra;aTk;. Xt;nthU Nfs;tpf;Fk; gjpy; nrhy;yTk; ed;wp.**

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1. cq;fs; ghjq;fis Ma;T nra;fpwPh;fsh?

a) xU ehspy; gyKiw b) xU ehs; xUKiw

c) thuj;jpy; 4-6 Kiw d)thuj;jpy ;xUKiw my;yJ FiwT

2. ePq;fs; fhyzpfis fhypy; mzpAk; Kd; ghpNrhjpf;fpwPh;fsh?;

a) ngUk;ghYk; b) rpy Neuq;fspy;

c) mhpjhf d) vg;NghJk; ghh;g;gjpy;iy

3. ePq;fs; cq;fs; fhyzpfis fow;wpa gpwF mtw;iw ePq;fs; ghpNrhjpf;fpwPh;fsh?

a) ngUk;ghYk; b) rpy Neuq;fspy;

c) mhpjhf d) vg;NghJk; ghh;g;gjpy;iy

4. ePq;fs; cq;fs; fhy;fis fOTfpwPh;fsh?

a) xU ehspy; gyKiw b) xU ehs; xUKiw

c) thuj;jpy; gy ehs; d) thuj;jpy; rpy ehs;

5. ePq;fs; cq;fs; fhy;fis fOtpa gpwF Jilj;J ghpNrhjpf;fpwPh;fsh?

a) ngUk;ghYk; b) rpy Neuq;fspy;

c) mhpjhf d) vg;NghJk; ghh;g;gjpy;iy

6. ePq;fs; cq;fs; ghj tpuy;fSf;fpilapy; Jilf;fpwPh;fsh?

a) vg;nghOJk; b) ngUk;ghYk;

c) rpyNeuq;fspy; d) mhpjhf

7. ePq;fs; cq;fs; fhy;fis <ug;gjkhf itj;jpUf;f fphPk;

gad;gLj;JfpwPh;fsh?

a) jpdKk; b) thuj;jpy; xUKiw

c) khjj;jpy; xUKiw d) xUNghJk; ,y;iy

8. ePq;fs; cq;fs; fhy; tpuy;fSf;fpilapy; <ug;gjkhf itj;jpUf;f fphPk;

gad;gLj;JfpwPh;fsh?

a) ngUk;ghYk; b) rpy Neuq;fspy;

c) mhpjhf d) vg;NghJk; ,y;iy

9. cq;fs; tpuy; efq;fis ntl;LfpwPh;fsh?

a) thuj;jpy; xUKiw b) khjj;jpy; xUKiw

c) xU khjj;jpw;F Fiwthf d) xUNghJk; ,y;iy

10. ePq;fs; fhyzp mzpfpwPh;fsh?

a) ngUk;ghYk; b) rpy Neuq;fspy;

c) mhpjhf d) vg;NghJk; ,y;iy

11. ePq;fs; nrUg;G mzpfpwPh;fsh?

a) ngUk;ghYk; b) rpy Neuq;fspy;

c) mhpjhf d) vg;NghJk; ,y;iy

12. ePq;fs; tpisahLk;NghJ mzpAk; fhyzpfis vg;NghJk; gad;gLj;JfpwPHfsh?

a) ngUk;ghYk; b) rpy Neuq;fspy;

c) mhpjhf d) vg;NghJk; ,y;iy

13. ePq;fs; moFf;fhd fhyzpfis mzpfpwPh;fsh?

a) ngUk;ghYk; b) rpy Neuq;fspy;

c) mhpjhf d) vg;NghJk;; ,y;iy

14. ePq;fs; ghjk; cah;thd fhyzpfis mzpfpwPh;fsh?

a) ngUk;ghYk; b) rpy Neuq;fspy;

c) mhpjhf d) vg;NghJk; ,y;iy

15. ePq;fs; rkkhd epiyapy; ,Uf;f fhyzpfis mzpfpwPh;fsh?

a) ngUk;ghYk; b) rpy Neuq;fspy;

c) mhpjhf d) vg;NghJk;; ,y;iy

16. cq;fs; Gjpa fhyzpfs; njhlh;e;J cilfpwjh?

a) ngUk;ghYk; b) rpy Neuq;fspy;

c) mhpjhf d) vg;NghJk;; ,y;iy

17. ePq;fs; nraw;ifahd (v:fh) ieyhd; ,ioapyhd fhYiwia mzpfpwPh;fsh?

a) ngUk;ghYk; b) rpy Neuq;fspy;

c) mhpjhf d) vg;NghJk;; ,y;iy

18. ePq;fs; fhyzpfis rhf;]; / fhYiwfs; / fhw;rl;il ,y;yhky; mzpfpwPh;fsh?

a) ngUk;ghYk; b) rpy Neuq;fspy;

c) mhpjhf d) vg;NghJk; ghh;g;gjpy;iy

19. ePq;fs; jilaw;w fhYiwfs;> fhw;rl;ilfis mwpfpwPh;fsh?

a) ngUk;ghYk; b) rpy Neuq;fspy;

c) mhpjhf d) vg;NghJk;; ,y;iy

20. ePq;fs; fhyzpfis rhf;]; / fhYiwfs; / fhw;rl;il vg;NghJ khw;WtPh;fs;

a) xU ehspy; gyKiw b) xU ehs; xUKiw

c) thuj;jpy; 4-6 Kiw d) thuj;jpy; xUKiw my;yJ FiwT

21 ePq;fs; ntw;W fhy;fSld; tPl;il Rw;wp elf;fpwPh;fsh?

a) ngUk;ghYk; b) rpy Neuq;fspy;

c) mhpjhf d) vg;NghJk; ,y;iy

22. ePq;fs; ntspNa nry;Yk; NghJ ntw;W fhy;fSld; elf;fpwPh;fsh?

a) ngUk;ghYk; b) rpy Neuq;fspy;

c) mhpjhf d) vg;NghJk; ,y;iy

23. ePq;fs; gLj;jpUf;Fk; NghJ #lhd ePh; Fg;gpfis fhypy; gad;gLj;JfpwPh;fsh?

a) ngUk;ghYk; b) rpy Neuq;fspy;

c) mhpjhf d) vg;NghJk; ,y;iy

24. cq;fs; ghjq;fis jPapd; mUfpy; itj;jJ cz;lh?

a) ngUk;ghYk; b) rpy Neuq;fspy;

c) mhpjhf d) vg;NghJk;; ,y;iy

25. cq;fs; ghjq;fis ePuhtp fyd; kPJ itj;jpUf;fpwPh;fsh?

a) ngUk;ghYk; b) rpy Neuq;fspy;

c) mhpjhf d) vg;NghJk; ,y;iy

26. ePq;fs; Fspay; ntg;gkhdpia gad;gLj;JfpwPh;fsh?

a) ngUk;ghYk; b) rpy Neuq;fspy;

c) mhpjhf d) vg;NghJk; ghh;g;gjpy;iy

27. ePq;fs; cq;fs; fhy;fspy; gpj;j ntbg;G> gpj;j ntbg;G gpsh];lh; gad;gLj;JfpwPh;fsh?

a) vg;nghOjhtJ b) gpj;j ntbg;G tUk;NghJ

c) mhpjhf d) vg;NghJk ,y;iy

28. cq;fs; fhy;fspy; nfhg;Gsk; tUk;NghJ fl;L NghLfpwPh;fsh?

a) ngUk;ghYk; b) rpy Neuq;fspy;

c) mhpjhf d) vg;NghJk; ghh;g;gjpy;iy

29. cq;fs; fhy;fspy; jPf;fhak;> KwpT Vw;gl;lhy; ghjq;fspy; cyh;e;j Jzpfl;L NghLfpwPh;fsh?

a) ngUk;ghYk; b) rpy Neuq;fspy;

c) mhpjhf d) vg;NghJk; ,y;iy

| **Score** | **Grading** |
|---|---|
| 59 to 87 | Good |
| 30 to 58 | Average |
| 0 to 29 | Poor |

## APPENDIX – 7

## LESSON PLAN ON FOOT CARE INSTRUCTIONS FOR DIABETICS

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| Name of the invigilator | : | V.Anil Vince |
| Place | : | Selected place at Kanyakumari Dist. |
| Duration | : | 60 min |
| Method of Teaching | : | Lecture cum discussion |
| Teaching aid | : | Power point presentation, Video clipping and demonstration |

**GENERAL OBJECTIVE:**

At the end of this instruction the diabetes with acquire knowledge on foot care and implement the foot care practice to prevent diabetic foot in future.

**SPECIFIC OBJECTIVES**: The group of diabetics will able to,

- Understand about Type-II diabetes

-Describe about diabetic foot ulcer

-List down the causes and risk factors of diabetic foot ulcer

-Mention about preventive measures of diabetic foot ulcer

-Visualise the techniques of foot care through the video presentation perform foot care

| S.NO | SPECIFIC OBJECTIVE | CONTENT | EVALUVATION |
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| | Introduction regarding diabetes mellitus<br><br>- understand about Type-II diabetes | **DIABETES MELLITUS**<br><br>Globally, as of 2013, an estimated 382 million people have diabetes worldwide, with type 2 diabetes making up about 90% of the cases. This is equal to 3.3% of the population, with equal rates in both women and men. In 2011 diabetes resulted in 1.4 million deaths worldwide, making it the 8th leading cause of death. The number of people with diabetes is expected to rise to 592 million by 2035.<br><br>**Diabetes mellitus** (**DM**) or simply **diabetes**, is a group of metabolic diseases in which a person has high blood sugar.<br><br>This high blood sugar produces the symptoms of frequent urination, increased thirst, and increased hunger.<br><br>Untreated, diabetes can cause many complications. Acute complications include diabetic ketoacidosis and nonketotic hyperosmolar coma. Serious long-term complications include heart disease, kidney failure, and damage to the eyes.<br><br>Diabetes is due to either the pancreas not producing enough insulin, or because cells of the body do not respond properly to the insulin that is produced.<br><br>There are three main types of diabetes mellitus:<br><br>• Type 1 DM results from the body's failure to produce insulin. This form was | |

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| | Explain about diabetic foot ulcer | previously referred to as "insulin-dependent diabetes mellitus" (IDDM) or "juvenile diabetes"<br>• Type 2 DM results from insulin resistance, a condition in which cells fail to use insulin properly, sometimes also with an absolute insulin deficiency. This form was previously referred to as non insulin-dependent diabetes mellitus (NIDDM) or "adult-onset diabetes".<br>• Gestational diabetes, is the third main form and occurs when pregnant women without a previous diagnosis of diabetes develop a high blood glucose level.<br><br>**Signs and symptoms**<br><br>• Thirst<br>• Polyuria<br>• Polyphagia<br>• Fatigue<br>• Weight loss<br><br>**Complications of diabetes:**<br><br>• **Eye complications ,Stroke** ,**Infections Skin complications**,**Heart problems**<br>• **Hypertension** ,**Mental health**,**Hearing loss**,**Neuropathy** ,**Nephropathy**<br>• **Foot complications** - neuropathy, ulcers, and sometimes gangrene which may require that the foot be amputated<br>• **PAD (peripheral arterial disease)** - symptoms may include pain in the leg, tingling and sometimes problems walking properly<br>• **Healing of wounds** - cuts and lesions take much longer to heal. | |

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| | List down the causes and risk factor of diabetic foot ulcer | **Prevention of Diabetic Foot Ulcer**<br><br>**Introduction**<br><br>What is Diabetes foot:<br><br>The term "Diabetic Foot" is used to refer to a variety of pathologic conditions that may affect the feet of people with diabetes.<br><br>**General Information regarding diabetic foot**<br><br>All Diabetes mellitus patients require effective education regarding prevention of foot injuries, foot care because diabetes initially causes poor circulation and nerve damage and leads to injury.<br><br>• Nerve damage caused by the high levels of glucose in blood can lead to loss of circulation, pain, tingling and burning sensation in the feet.<br>• Diabetes patient feet becomes cold due to less blood circulation<br>• In diabetic patients, Foot ulcer occurs because default treatment and not giving proper attention and care of feet.<br>• Diabetic patients may not feel pebbles nails, small stones inside the shoes, chapels that can cause a sore or even blister with wearing of new shoes. Such injuries can cause ulcers, which do not properly heal and may get infected; therefore a little care everyday can prevent such foot problems. | |

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| | | RISK FACTORS<br><br>Patients who have had a previous foot ulcer are more likely to have future foot complications. Nerve damage, poor circulation, and chronically high blood sugar levels also increase the likelihood of foot complications.<br><br>It is important to wear shoes that fit well. Shoes that are too tight can cause pressure ulcers. Going barefoot, even in the home, should be avoided as this increases the risk of injury to the foot.<br><br>DIABETES AND FOOT COMPLICATIONS<br><br>Diabetes can lead to many different types of foot complications, including athlete's foot (a fungal infection), calluses, bunions and other foot deformities, or ulcers that can range from a surface wound to a deep infection.<br><br>Poor circulation — Longstanding high blood sugar can damage blood vessels, decreasing blood flow to the foot. This poor circulation can weaken the skin, contribute to the formation of ulcers, and impair wound healing. Some bacteria and fungi thrive on high levels of sugar in the bloodstream, and bacterial and fungal infections can break down the skin and complicate ulcers.<br><br>More serious complications include deep skin and bone infections. Gangrene (death and decay of tissue) is a very serious complication that may include infection; widespread gangrene may require foot amputation. Approximately 5 percent of men and women with diabetes eventually require amputation of a toe or foot. This tragic | |

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| | Mention about preventive measures of diabetic foot ulcer | consequence can be prevented in most patients by managing blood sugar levels and daily foot care.<br><br>Nerve damage (neuropathy) — Elevated blood glucose levels over time can damage the nerves of the foot, decreasing a person's ability to notice pain and pressure. Without these sensations, it is easy to develop callused pressure spots and accidentally injure the skin, soft tissue, bones, and joints. Over time, bone and joint damage can dramatically alter the shape of the foot. Nerve damage, also called neuropathy, can also weaken certain foot muscles, further contributing to foot deformities<br><br>**Following simple steps to the take care of your feet**<br><br>**Check your feet Every day**<br><br>a. Check your feet as a daily routine just like brushing your teeth regularly.<br><br>b. Check your feet for cuts, sores, red spots, swelling or infected toe nails and calluses.<br><br>c. Use a mirror so that you can see the heel, sole and both sides of your feet thoroughly.<br><br>d. If it is difficult ask a caregiver to help you or ask any of the family member.<br><br>e. Be sure to consult your doctor immediately if a cut, sore, blister or bruise on your foot does not heal after one day. | |

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| | | **Wash your feet every day**<br>a. Wash your feet every day with Luke warm water and a use of mild soap.<br>b. To avoid Scalds test water temperature with your elbow.<br>c. Use soft towel to dry them carefully and thoroughly, in between the toes.<br>d. Sprinkle talcum powder to keep the skin dry in between the toes.<br>e. Do not soak your feet more than 15-20 minutes this will make your skin too dry, skin can break down and won't heal well.<br>f. Never use hot water to soak your feet.<br>**Keep the skin soft and smooth**<br>a. Apply a thin coat of skin lotion or cream on the top and bottom of the feet completely.<br>b. Use of olive-oil, Lubriderm, vitamin-E oil, Lanolin for smoothness<br>c. Avoid Vaseline, petroleum jelly and mineral oil.<br>d. Do not use any chemicals or strong antiseptic solutions on your feet. | |

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| | | for eg:- iodine, salicyl corn, callus removers are dangerous.<br><br>e. Do not put lotion between your toes, because it might cause infection.<br><br>f. Do not use any type of tape or sticky products such as corn plasters on your feet.<br><br>**Wear shoes and socks at all times**<br><br>a. Use shoes and socks at all times whenever possible.<br><br>b. To protect the feet, preferably wear cotton socks or stocking, they allow the feet to stand dry.<br><br>c. Always wear seamless white, padded socks and stockings with your shoes to help the possibility of blisters and sores developing.<br><br>d. Select shoes, which are most comfortable and appropriate size.<br><br>e. Always check the inside of your shoes before wearing them.<br><br>f. Make sure the lining is smooth and there are no foreign objects in the shoe, such as pebbles and nails.<br><br>g. Wear shoes that fit well and protect your feet well.<br><br>h. Do not use tight shoe or socks that restrict the blood flow that cause ulcer.<br><br>i. Do not use any socks with holes. | |

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| | | j. Never walk with bare foot either indoors or outdoors.<br><br>**Shoes**<br>• Shoes should be comfortable and well-fitting.<br>• Have both feet measured each time shoes are bought.<br>• Buy new shoes late in the day since feet often swell or enlarge during the day. Buy shoes to fit the larger foot if there is a difference.<br>• Choose shoes with a wide and deep toe box (test depth with a looney put in sideways, test width by outlining your foot on a piece of paper and placing the shoe over the drawing).<br>• When buying shoes, wear the type of socks that you will be wearing with those shoes.<br>• Choose shoes made of calfskin or soft leather, if possible.<br>• Buy shoes with laces. These provide more support, distribute pressure around the sides and top and allow adjustment for swelling.<br>• Shoes should have good, non-skid soles, closed toes and heels, with no ridges, wrinkles or seams in the linings (good running shoes or walking shoes are | |

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| | | recommended).<br>• Avoid slip-on shoes, shoes with pointed toes and sandals, especially sandals with thongs between the toes.<br>• Do not wear shoes with heels higher than 1 inch (2.5cm) as they increase pressure on the metatarsal heads.<br>• Break new shoes in gradually, adding one hour of wearing time each day. Frequently inspect the feet, looking for areas of redness that indicate potential problems.<br>• Do not wear any shoes longer than six hours without removing. Each pair of shoes fits differently and distributes pressure differently.<br>• Check shoes before wearing for small stones or puckered or bunched up areas.<br>**Socks**<br>• Wear clean socks every day. Cotton or wool is best to absorb perspiration.<br>• Socks should fit well. Avoid tight elastic at the top.<br>• If wearing knee-high hosiery, make sure it has a wide band at the top.<br>• Check socks for irritation or bunching. Avoid seams if possible.<br>• Do not wear mended socks; they may cause an area of pressure.<br>• Do not wear socks with holes; they may cause an area of friction. | |

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| | | **Protect your feet from Hot and Cold**<br><br>a. Keep feet away from heat (heating pads, hot water pads, electric blankets, radiator, fire places) you can burn your feet without knowing it.<br><br>b. During winter wear wool socks and protective footwear.<br><br>c. In cold weather, check your feet often to keep your feet warm avoid frostbite.<br><br>d. If your feet are cold, wear seamless socks at night.<br><br>e. Lines boots are good to keep your feet warm in the winter.<br><br>**Keep the Blood flowing to your feet**<br><br>a. Keep your feet little up when you are sitting.<br><br>b. Wiggle your toes for 5 minutes. 2 or 3 times a day.<br><br>c. Move your ankles up and down and in and out to improve blood flow in your feet and legs.<br><br>d. Do not cross your legs for long periods of time.<br><br>**To be more Active / Exercise**<br><br>a. Consult your doctor to plan an exercise program that is right for you. Walking, dancing, swimming and bicycling are good forms of exercise that are easy on the feet. | |

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| | | b. Regular exercise will improve bone and joint health in your feet and legs. Improve blood circulation to your legs, and will also help to stabilize your bloodsugar.<br><br>c. Walking regular is a good exercise for the feet. Do foot exercise twice a day to improve blood circulation to feet.<br><br>d. Wear clean socks after smoothening the wrinkles.<br><br>e. Avoid all activities that are hard on the feet such as running and jumping.<br><br>f. Do not cross your legs for long periods of time.<br><br>**To Eliminate obstacles**<br><br>a. Move and remove any objects you are likely to trip over or bump your feet on.<br><br>b. Do not walk in dark places.<br><br>**Toe nail trimming**<br><br>a. Always cut your nails with a safety clipper, never a scissors. After you have washed and dried your feet.<br><br>b. Cut them straight properly, trim the nails following the shape of your toes.<br><br>c. Use a smooth brush to smoothen sharp edges. | |

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| | | d. If your nails are very thick or yellowed, have a foot care specialist to trim them.<br><br>e. Do not cut the nails in corners<br><br>f. No bathroom surgery.<br><br>g. Do not treat injuries or wounds at home.<br><br>h. Never cut corns and calluses with razor blade, corn plaster and scissors this can damage the skin of the feet.<br><br>**To take care of your Diabetes**<br><br>Following a less carbohydrate diet, taking your medications, checking your blood sugar regularly, exercise regularly and maintaining good communication with your physician are essential in keeping your diabetes under control.<br><br>**Communication with your doctor**<br><br>Consult your doctor to check the sense of feeling and pulses in your feet at least once a year.<br><br>. Consult your doctor to tell you immediately if you have serious foot problems.<br><br>. Take a foot care tips to prevent amputation. | |

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| | | **Smoking**<br>• Do not smoke, it decreases the blood supply to your feet, damages the small blood<br>• vessels leading to poor circulation and risk factor for foot infection.<br>• Avoid consuming alcohol.<br>**Warning signs of foot complications**:-<br>• Change in skin colour<br>• Elevation in skin temperature<br>• Swelling of the feet or ankle.<br>• Pain in the legs.<br>• Open sores on the feet that are slow to heal.<br>• In grown and fungal toe nails<br>• Bleeding corn or calluses.<br>• Dry cracks in the skin, especially around the heel<br>**Instructions for locating and palpating Pedal Pulses**<br>**Dorsials Pedis**<br>Place fingers just lateral to the extensor tendon of the great toe. (If you cannot feel a pulse, move fi ngers more laterally.) | |

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| | | **Posterior Tibial**<br>Place fingers behind and slightly below the medial malleolus of the ankle. (In an obese oredematous ankle, the pulse may be more difficult to feel.)<br>To enhance technique, assume a comfortable position for you and the client. Place hand in position and linger on the site. Varying pressure may assist in picking up a weak pulsation. Do not confuse client's pulse with your own pulsating fingertips. Use your carotid pulse for comparison, if needed.<br><br>**"Diabetes is treatable – foot ulcer is preventable"** | |

**APPENDIX – 8**

## rHf;fiu Neha; ghj guhkhpg;G topKiwfis gw;wpa ghlk; jpl;lk;

Ma;thsH ngaH: tp. mdpy; tpd;];

,lk;: fd;dpahFkhhp khtl;lj;jpy; NjHe;njLf;fg;gl;l ,lq;fs;

fhyk;: 60 epkplk;

fw;gpf;Fk; Kiw: nrhw;nghopT kw;Wk; tpthj Kiw

fw;gpj;jy; cgfuzq;fs;;;;;: gtH ghapz;l; njhFg;G tPbNah %yk; nra;Kiw tpsf;fk;  Neubahd nray;Kiw tpsf;fk;

**nghJthd Nehf;fk**;:

,jd; ,Wjpapy;  rHf;fiu Nehahspfs; jq;fs; ghjg; guhkhpg;Gk; mij rhHe;j mwpitAk; vjpHfhyj;jpw;Fhpa njhlH tpopg;GzHitAk Vw;gLj;Jjy;

**Fwpg;gpl;l Nehf;fq;fs**;:;

rHf;fiu Nehahspfs; mwpe;J nfhs;s Ntz;bait

-Rh;f;fiu Neha; gw;wp mwpKfg;gLj;Jjy;

-,uz;lhtJ tif rHf;fiu Neha; gw;wpa fhuzq;fs; mwpFwpfs; rpfpr;ir Kiwfs; gpd; tpisTfs; rhHe;j mwpit Nkk;gLj;JtJ

-rHf;fiu Neha; ghjk; gw;wp mwpTWj;JtJ

-rHf;fiu Neha; ghjg;Gz;fSf;fhd fhuzq;fisAk; ahH ahUf;F tUk; vd;gtw;iwAk; mjw;fhd mwpFwpfisAk; gpd; tpisTfisAk; xd;wd; gpd; xd;qhf tpsf;Fjy;

_rHf;fiu Neha; ghjGz;fisj; jLf;Fk; Kiwfis $Wjy;

_fhz;xsp fhl;rp%yKk; Neub nray; tpsf;fk; %yKk; ghjg;guhkhpg;ig fhl;Ljy;

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| | | **ePhpopT Neha;**<br>cyfstpy; 2013-k; Mz;L Gs;sp tptug;gb 382 kpy;ypad; kf;fs; 2-tJ tif rh;f;fiu Nehahy; ghjpf;fg;gl;Ls;sdh;. Mz;fs;> ngz;fs; ,UtUk; rktpfpjj;jpy; ghjpf;fg;gl;Ls;sdh;. ,J cyf kf;fs; njhifapy; 3.3% MFk;. cyfstpy; rh;f;fiu Nehapd; jhf;fk; 2035-y; 592 kpy;ypad; caUk; vd;W vjph; ghh;f;fg;gLfpwJ. rh;f;fiu Neha; caphpog;gpw;F vl;lhtJ fhuzkhFk;. 2011-Mk; Mz;L Gs;sp tptuj;jpd;gb Rkhh; 1.4 kpy;ypad; kf;fs; rh;f;fiu Nehahy; ,we;Js;sdh;.<br>**<u>tiuaiw</u>:**<br>,uj;jj;jpy; rh;f;fiuapd; msT mjpfhpg;gjpdhy; rh;f;fiu Neha; tUfpwJ.<br>,uj;jj;jpy; mjpf msT rh;f;fiu ,Ug;gij gpd;tUk; mwpFwpfs; ekf;F czh;j;JfpwJ. mbf;fb rpWePh; fopj;jy;> mjpf grp.<br>rh;f;fiu Neha;f;F rhpahd rpfpl;ir vLf;fhtpl;lhy; gpd;tUk; gf;f tpisTfshy; rh;f;fiu Nehahsp Jd;gg;gLfpwhh;. rpWePuf nraypog;G> ,ja Neha; fPl;Nlh mrpNlhrpR> fz;fs; ghjpg;G> rh;f;fiu Nehahy; fhypy; Mwhj fhaq;fs;.<br>rh;f;fiu Neha;f;fhd fhuzq;fs;: clypy; Njitahd msT ,d;Rypd; fizaj;jhy; | |

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| | | Ruf;fhky; ,Ug;gJ my;yJ fizaj;jhy; Rue;j ,d;Rypd; xOq;fhf Ntiyr; nra;ahky; ,Ug;gJ.<br>**ePhpopT Nehapid ehd;F tiffshfg; gphpf;fyhk;**<br>**tif – 1**<br>clypw;F Njitahd ,d;Rypd; fizaj;jhy; Ruf;fhky; ,Ug;gJ my;yJ ,J ,sk;gUt rh;f;fiu Neha; vdyhk;. Foe;ijfisAk; ,J ghjpf;fpwJ.<br>**tif – 2**<br>clypy; Njitahd msT ,d;Rypd; Ruf;Fk;. Mdhy; ,J ekJ clypy; ,Uf;Fk; nry;fshy; rhpahf gad;gLj;j Kbahky; NghfpwJ. ,jid tif 2 rh;f;fiu Neha; vdyhk;.<br>**3. fh;g;gf;fhy ePhpopT Neha;:**<br>,e;j Neha; fh;g;gf; fhyj;jpy; xU rpy ngz;fSf;F tUfpwJ.<br>**4. kw;w fhuzq;fspdhy;**<br>**jLg;G Kiwfs;:**<br>KjyhtJ tif rh;f;fiu Nehia jLg;gjw;fhd Kiwfs; ,y;iy. Mdhy; ,uz;lhtJ tif rh;f;fiu Nehia Kiwahd clw;gapw;rp> rhpahd czT gof;f tof;fq;fs; filg;gpbg;gjd; %yKk; rhpahd cly; vilia ghuhkhpg;gjd; %yKk; Kiwahd kUj;Jt MNyhrid %yKk; jLf;fyhk;. cztpy; mjpfkhd ehh;r;rj;J czTfs;> gUg;G tiffs; jhtu vz;nza;> kPd; Nghd;wtw;wpy; ey;y nfhOg;Gf;fs; cs;sd.<br>Gifg;gpbj;jy; rh;f;fiu Neha;f;F Kf;fpa fhuzkhf cs;sJ. | |

**rh;f;fiu Nehapdhy; tUk; gpd;tpisTfs;:**

fz;fspy; Gifg; Nghd;w rpf;fy;fs;> cly; ghfq;fs; nraypog;G> njhw;W Neha;fs;> Njhy; Neha;fs;> ,ja Neha;fs; Vw;gLk;. NkYk; cah; ,uj;j mOj;jk;> kdeyk; ghjpg;G> fhJNfshik> euk;Gf; NfhshW> rpWePufr; nray;ghL.

ghjj;jpy;: rpf;fy;fs;> fhy; euk;Gf; NfhshW> fhy;fspy; Gz;fs;> fhy; mOFjy;> rpy Neuq;fspy; fhy; Jz;bg;G Vw;glyhk;. jkdp Neha;fs;> $r;r czh;T> fhypy; czh;r;rp ,y;yhik> Gz;fs; Mw mjpf Neuk; vLg;gJ Nghd;wit.

**rh;f;fiu Neha;f;fhd ghjguhkhpg;G> Gz; jLg;G**

**Kd;Diu:**

rh;f;fiu Nehahsp fhy;fspy; mjpf ftdk; nrYj;j Ntz;Lk;. ,y;yhtpby; mJ fhypw;Fk;> capUf;Fk; nghpa Mgj;ij Vw;gLj;Jk;.

**rh;f;fiu ghjk; vd;why; vd;d?**

rh;f;fiu NehahspfSf;F fhypy; Vw;gLk; ghjpg;Gf;fis rh;f;fiu ghjk; vdyhk;.

**rh;f;fiu ghjk; gw;wpa nghJthd jfty;fs;:**

vy;yhtpjkhd rh;f;fiu NehahspfSk; fhy; guhkhpg;G> fhypy; Gz; tUtJ Nghd;w tpopg;Gzh;TfSk; mijg;gw;wp mwpe;jpUf;f Ntz;Lk;. fhuzk;

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| | | rh;f;fiu Neha; fhy;fspy; Fiwe;j ,uj;j Xl;lj;ijAk;> euk;G Nrjj;ijAk;> fhaj;ijAk; cUthf;FfpwJ.<br>,uj;jj;jpy; mjpf msT rh;f;fiu fye;jpUg;gjpdhy; euk;Gr;Nrjj;ij cUthf;FfpwJ. NkYk; ,J Fiwe;j ,uj;j Xl;lk;> typ> fhy; kuj;Jg; Nghjy;> fhypy; vhpr;riyAk; cUthf;FfpwJ. rh;f;fiu Nehahspf;F Rygkhf fhypy; Gz; tUfpwJ fhuzk; mth;fs; ,jw;fhf rhpahd Kiwapy; kUe;J vLf;fhky; ,Ug;gJk;> mij xU Kf;fpaj;Jtkhf fUjhky; ,Ug;gJk;> fhy;guhkhpg;G gw;wpa tpopg;Gzh;T ,y;yhky; ,Ug;gJkhFk;.<br>rh;f;fiu Nehahspfs; fhyzpfs; cs;Ns $ohq;fw;fs;> rpWfw;fs; njhpahky; ,Ug;gJ> GJf;fhyzpfs; mzptJ ,itnay;yhk; fhypy; nfhg;Gsq;fs; tUtjw;Fk;> fhaq;fs; Vw;gLtjw;Fk; fhuzkhfpd;wd. rpy fhaq;fSk; Gz;fis Vw;gLj;JfpwJ. ,it rhpahf guhkhpf;fhtpl;lhy; fpUkpfshy; jhf;fg;gLfpwJ. ehk; vy;yh ehl;fSk; rpwpjhf guhkhpg;gjd; %yk; fhypy; Vw;gLk; gpd;tpisTfisj; jLf;fyhk;.<br>**Mgj;jpw;fhd fhuzq;fs;:**<br>Vw;nfdNt fhy;fspy; Gz;fs; Vw;gl;lth;fs;> euk;Gr;Nrjk; Vw;gl;lth;fs;> Fiwe;j ,uj;j Xl;lk;> mjpf ehshf ,uj;jj;jpy; mjpf msT rh;f;fiu ,itnay;yhk; Kf;fpa fhuzq;fs; MFk;. ,jw;F mLj;jg;gbahf rhpahd mstpy; ,y;yhj fhyzpfis thq;fp mzpahky; ,Ug;gJk;> ,Wf;fkhd fhyzpfis thq;fp mzptjhy; mOj;jj;jpdhy; Gz; Vw;gLfpwJ. fhy;fspy; fhyzpapy;yhky; | |

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| | | tPl;bYk;> tPl;bw;F ntspNaAk; elg;gJ ,itnay;yhk; fhypy; fhak; Vw;gLtij jtph;g;gjw;fhd Kf;fpa topKiwfs; MFk;.<br><br>**rh;f;fiu Neha; kw;Wk; ghjj;jpy; Vw;gLk; rpf;fy;fs;:**<br>rh;f;fiu Neha; gytpjkhd ghjg;gpd; tpisTfis Vw;gLj;JfpwJ. G+Q;irf; fUkp jhf;fk;> ghjj;jpy; Njhy; jbkdhFjy;> ghjj;jpy; FiwghLfs; kw;Wk; Gz;fspy; Neha; fpUkpfs; jhf;Fjy;.<br>**Fiwe;j ,uj;j Xl;lk;:**<br>,uj;jj;jpy; mjpf msT rh;f;fiuAld; mjpf Neuk; epw;gJ> ,uj;j ehsq;fis Nrjg;gLj;JfpwJ. ,J ghjj;jpw;fhd ,uj;j Xl;lj;ijf; Fiwf;fpwJ. Fiwe;j ,uj;j Xl;lk; Njhiy tYtpof;fr; nra;fpwJ. NkYk; ,J Gz;fs; cUthFtjw;F fhuzkhf cs;sJ kw;Wk; fhaq;fs; MWtijAk; jLf;fpwJ. Rpy ghf;Bhpah kw;Wk; G+Q;irf; fpUkpfSk; Njhiyf; fpopj;J Gz; tUtjw;F fhuzkhfpwJ. ,e;j Gz;fs; MokhfTk;> vYk;G tiu CLUtpr; Nrjg;gLj;JfpwJ.<br>mOfy; (,wg;G kw;Wk; jpR rpijT) fpUkpj;njhw;wpd; jPtpukhd fhuzq;fs; MFk;. ,it NkYk; gf;fj;jpypUf;Fk; rij jpRf;fSf;F guTk; NghJ fhiy mfw;w Ntz;b tUk;. rh;f;fiu Nehahsp Mz;> ngz; ,UthpYk; Rkhh; 30% fhypy; Cdk; Vw;gLtjw;F tha;g;Gfs; ,Uf;fpd;wd. ,e;j Jau tpisit jLg;gjw;F ,uj;jj;jpy; rh;f;fiu msit rhpahd epiyapy; itg;gJk;> NkYk; ghjg;guhkhpg;ig | |

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| | | filg;gpbg;gjd; %yk; ngUk;ghyhd Neha;fisj; jLf;fyhk;.<br>**euk;Gr; Nrjk;:**<br>,uj;jj;jpy; mjpf rh;f;fiu ,Ug;gJ fhy; typiaAk;> euk;igAk; Nrjg;gLj;JfpwJ. czh;r;rp ,y;yhky; ,Ug;gjhy; rpy Neuq;fspy; typiaAk; kw;Wk; mOj;jj;ijAk; Fiwf;fpwJ. czh;T ,y;yhky; ,Ug;gjhy; ntz;ikahd jpR> Njhy;> vYk;Gfs;> %l;Lf;fs;> ghjj;Njhiyf; fl;bg;gLj;JfpwJ. ,jdhy; Rygkhf mOj;jj;jpdhy; jw;nrayhf fhag;gLtJk;> euk;Gfs; ghjpg;gJk; NkYk; fhypy; FiwghLfs; Nky; Fwpg;gpl;l jirfis tYtpof;fr; nra;fpwJ.<br>**gpd;tUk; topKiwfis filgpbg;gjd; %yk; cq;fs; fhy;fis guhkhpf;fyhk;> ghJfhf;fyhk;.**<br>**cq;fs; fhy;fis jpdKk; guhkhpf;fTk;:**<br>➢ xt;nthU ehSk; rhg;gpl;L gy; Jyf;FtJ Nghy cq;fs; fhy;fisAk; ftdpAq;fs;.<br>➢ cq;fs; fhy;fspy; ntl;Lf; fhaq;fs;> Gz;fs;> rptg;G Gs;spfs;> tPf;fk; my;yJ ghjpf;fg;gl;l fhy; efq;fs;> fhypy; fl;bahfj; Njhy; VjhtJ cs;sjh vd;W ghh;f;fTk;.<br>➢ ePq;fs; xU Kfk; ghh;f;Fk; fz;zhbia gad;gLj;jp fhypy; mbg;ghfk; Mfpatw;iw Rygkhfg; ghh;f;fyhk;. mJ Kbatpy;iynad;why; cq;fs; FLk;g cWg;gpdiuNah> cq;fs; guhkhpg;ghsiuNah gad;gLj;jp cq;fs; fhy;fisg; ghpNrhjpf;fyhk;. | |

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| | | ➢ ePq;fs; xU ntl;Lf;fhaj;ijNah> nfhg;Gsq;fisNah> xU fhaj;ijNah fz;lwpe;jhy; clNd kUj;Jtiu mZfTk;. fhaq;fs; kUj;Jtiu mZFtjd; %yk; tpiutpy; MwptpLk;.<br>**cq;fs; fhy;fis jpdKk; fOTq;fs;:**<br>✯ cq;fs; fhy;fis ntJntJg;ghd #L ePhpdhy; Fiwe;j msT Nrhg;igg; gad;gLj;jpf; fOtTk;.<br>✯ fhy;fis fOTKd; cq;fs; iffspd; gpd;gFjpiag; gad;gLj;jp jz;zPhpd; ntg;gepiyia ghpNrhjpAq;fs;> ,y;yhtpby; ntg;gepiy khdpia gad;gLj;Jq;fs;. cs;sq;ifg; gad;gLj;Jtij jtph;f;fTk;. fhuzk; ntg;gj;jpd; msit ek;khy; fzpf;f KbahJ.<br>✯ fhuzk; cq;fs; fhy;fspy; rpy Neuq;fspy; czh;r;rp Fiwthf ,Uf;Fk;. mjdhy; RLePhpy; ntg;gk; njhpahJ. ,jdhy; fhypy; fhaq;fs;> nfhg;Gsq;fs; Vw;glyhk;.<br>✯ fhy;fis fOfpag; gpwF fhy;fisAk;> fhy; tpuy; ,ilfisAk; ftdkhfTk;> nkd;ikahfTk; Jilf;fTk;.<br>✯ fhy; tpuy; ,ilntspfspy; Kfj;jpy; gad;gLj;Jk; gTliug; gad;gLj;Jtjd; %yk; ehk; <ug;gjk; ,y;yhky; itf;fyhk;. ,jdhy; G+Q;ir jhf;Fjy; FiwAk;.<br>✯ cq;fs; fhy;fis 15 Kjy; 20 epkplq;fSf;F Nky; Cwitf;f Ntz;lhk;. ,t;thW itg;gjdhy; cq;fs; ghjj;Njhy;fs; cyh;e;J twz;L tpLk;. Rygkhf fhakila tha;g;Gs;sJ> fhaq;fSk; MWtjpy;iy. | |

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| | | ✯ vg;nghOJk; cq;fs; fhy;fis #lhd ePiug; gad;gLj;jpf; fOfTk;. kpfTk; #lhd ePiug; gad;gLj;Jtij jtph;f;fTk;. ePh; ntJntJg;ghf ,Uf;f Ntz;Lk;.<br>**cq;fs; fhy; Njhy;fis nkd;ikahfTk;> kpUJthfTk; itj;jpUg;gJ vg;gb**<br>❖ cq;fs; fhy;fspy; Nky; kw;Wk; fPo; Gwq;fspy; Njhypy; gad;gLj;Jk; fphPk; my;yJ Nyhrd; gad;gLj;jp ghJfhg;ghf itf;fyhk;. ,J Njhy; fpoptijj; jLf;fpwJ.<br>❖ Mypt; vz;nza;> Njq;fha; vz;nza;> tpl;lkpd; < vz;nza; Nghd;wtw;why; nkd;ikahf G+Rtjd; %yKk; ghJfhg;ghf itf;fyhk;.<br>❖ fhy;fspy; th];ypd;> ngl;Nuhypa n[y;yp kw;Wk; fdpk vz;nzia gad;gLj;Jtij jtph;f;fTk;.<br>❖ cq;fs; fhy;fspy; ve;jtpjkhd ,urhad G+r;R my;yJ tYthd fpUkp ehrpfisg; gad;gLj;j Ntz;lhk;. (v:fh) mNahbd;> nll;lhy;> rht;yh Nghd;wit.<br>❖ cq;fs; fhy;fspy; cs;s jbj;j Njhy;fis ePq;fNs mfw;WtJ Mgj;J. mjw;F fhy; guhkhpg;ghsiu mZfyhk;.<br>❖ cq;fs; fhy; ,ilfis Nyhrd;fs;> vz;nza;fs; gad;gLj;Jtijj; jtph;f;fTk;. gad;gLj;jpdhy; fpUkpj;njhw;W Vw;gLk;.<br>❖ cq;fs; fhy;fspy; gpsh];lh;> Nlg; Nghd;w xl;Lj; Jzpfis xl;Ltjd; %yk; fhy; Nrjk; Vw;gLtjw;F tha;g;Gfs; ,Uf;fpwJ. Mdhy; mtw;iw jtph;f;fTk;. | |

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| | | ❖ vy;yh Neuq;fspYk; fhyzpfis mzpAq;fs;> tPl;bw;F cs;NsAk;> ntspNaAk; vg;Nghnjy;yhk; fhyzpfisAk;> fhYiwfisAk; mzpa KbANkh mg;Nghnjy;yhk; mzpe;Jf; nfhs;Sq;fs;.<br>❖ cq;fs; ghjq;fisg; ghJfhf;f fhy;fspy; gUj;jpf; fhYiwfisg; gad;gLj;Jq;fs;.<br>❖ vg;NghJk; nts;isepw nghUj;jkhd fhYiwfisg; gad;gLj;Jq;fs;. fhyzpfSld; fhypy; fhaq;fs; kw;Wk; nfhg;Gsq;fs; Vw;gl;lhy; fhYiwfisAk;> fhyzpfisAk; gad;gLj;Jtijj; jtph;f;fTk;.<br>❖ kpfTk; trjpahd kw;Wk; rhpahd msT fhyzpfisj; Njh;e;njLj;J cq;fs; ghjq;fis ghJfhj;Jf; nfhs;Sq;fs;. kpfTk; ,Wf;fkhd fhyzp kw;Wk; fhYiwfisg; gad;gLj;Jtjhy; fhypw;F ,uj;j Xl;lk; jilg;gl;L Gz;fs; Vw;gLfpwJ.<br>❖ cq;fs; fhyzp kw;Wk; fhYiwfs; gad;gLj;Jk; Kd;> gpd; cs;gFjpia rhpg;ghh;f;fTk;. vjhtJ $ohq;fw;fNsh> kz;fNsh NtW VjhtJ Njitapy;yhjg; nghUl;fNsh> G+r;rpNah cs;sjh vd;W rhpg;ghh;f;fTk;.<br>❖ rhpahd msT fhyzpfisg; gad;gLj;Jtjd; %yk; cq;fs; fhy;fs; ghJfhf;fg;gLfpwJ. Jisfs; cs;s fhYiwia gad;gLj;j Ntz;lhk;.<br>**fhyzpfs; (#];)** | |

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| | | ⌘ #]; trjpahfTk; ed;F nghUe;jf; $bajhfTk; ,Uf;f Ntz;Lk;.<br>⌘ fhyzpfis thq;Fk; NghJ ,uz;Lk; rhpahd mstpy; cs;sjh vd;W mstpl Ntz;Lk;.<br>⌘ cq;fs; fhy;fspy; tPf;fk; my;yJ gUj;jpUf;Fk; NghJ fhyzpfis thq;fhjPh;fs;. ,y;yhtpby; tpj;jpahrkhf ,Uf;Fk;.<br>⌘ ePq;fs; fhyzpfis thq;Fk; NghJ xU Jz;L Ngg;ghpy; cq;fs; fhy;fis Nfhbl;L tiue;J msT ghh;f;fTk;.<br>⌘ ePq;fs; nkd;ikahd Njhypdhy; nra;ag;gl;l fhyzpfisj; Njh;Tr; nra;J thq;Fq;fs;.<br>⌘ ePq;fs; E}y; fl;Lk; fhyzpfisj; Njh;e;njLq;fs;. mJ fhypd; vy;yh Gwj;jpw;Fk; rhpahd mOj;jj;ijf; nfhLj;Jg; guhkhpf;fpwJ.<br>⌘ ePq;fs; eilg;gapw;rpf;Fk;> Xl;lj;jpw;Fk; gad;gLj;Jk; fhyzpfis thq;fyhk;. fhuzk; mJ mtw;wpw;Fs;Ns Jzp> gQ;R xl;lg;gl;bUf;Fk;.<br>⌘ ey;y fhyzpfSld; eilg;gapw;rp nra;Jf;nfhs;Sq;fs;.<br>⌘ cq;fs; fhy; tpuy;fSf;fpilapy; Njhypdhy; cUthf;fg;gl;l fhyzpfis mzpe;Jf; nfhs;tJ fhaj;ij Vw;gLj;Jk;.<br>⌘ fZf;fhy;fspy; mOj;jj;ijj; jtph;g;gjw;F fhyzpfspd; cauk; 1 Kjy; 2 ½ nrd;b kPl;lh; cauj;jpw;F ,Ug;gJ ey;yJ. | |

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| | | ⌘ Gjpa fhyzpfis mzpAk; NghJ Fwpg;gpl;l Neuj;jpw;F xUKiw fhiyg; ghpNrhjpf;fTk;. fhypy; VjhtJ rptg;Ngh> typNah> cuha;Nth Vw;gl;Ls;sjh vd;W ghpNrhjpf;f Ntz;Lk;.<br>⌘ njhlh;r;rpahf MW kzp Neuj;jpw;F Nkyhf xNu fhyzpfis mzpa Ntz;lhk;. xt;nthU fhyzpAk;> xt;nthU tpjkhd mOj;jj;ij Vw;gLj;Jk;. mjdhy; khw;Wf; fhyzpfis mzpayhk;.<br>⌘ cq;fs; fhyzpfspy; rpWfw;fNsh> kz;fNsh ,Uf;fpwjh vd;W ftdpAq;fs;.<br>**fhYiwfs;:**<br>✡ jpdKk; Rj;jkhd fhYiwfis mzpAq;fs;. gUj;jp my;yJ fk;gpspapyhd fhYiwfs; tpah;it ePiu cwpQ;r rpwe;jjhf cs;sJ. ed;whfg; nghUe;jf; $baf; fhYiwfisj; Njh;Tr; nra;Aq;fs;.<br>✡ ,Wf;fkhdf; fhYiwfisj; jtph;f;fTk;. Nkw;gFjpapy; ,yh];bf; ,Uf;Fk; fhYiwfisj; jtph;f;fTk;.<br>✡ ePq;fs; Koq;fhy; tiu fhYiwfis mzpe;jhy; Nkw;gFjpapy; ,yh];bf; ,Uf;f Ntz;lhk;.<br>✡ cq;fs; fhYiwfs; cq;fSf;F vhpr;rY}l;Lk; gb ,Wf;fkhf ,Ue;jhy; mtw;iwj; jtph;f;fTk;.<br>✡ jpdKk; fhYiwfis khw;wTk;. Jisfs; nfhz;l fhYiwfis mzpa Ntz;lhk;. mJ cuha;it Vw;gLj;Jk;. | |

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| | | **cq;fs; ghjq;fis #L kw;Wk; FsphpypUe;J ghJfhg;gPh;fs;:**<br>⌖ cq;fs; ghjq;fis ntg;gj;jpw;F mUfpNyh> neUg;gpw;F mUfpNyh itf;fhjPh;fs; (RLePh; igfs;> kpd;rhug; Nghh;itfs;> nfhjpfyd;fs;) ,jdhy; fhy;fis vhpf;f NehpLk;.<br>⌖ Fsh;fhyj;jpy; fk;gpsp rhf;];> fk;gpsp fhYiw kw;Wk; ghJfhg;G fhyzp mzpa Ntz;Lk;.<br>⌖ cq;fs; fhypd; ntg;g epiyia cq;fs; iffshy; mt;tg;NghJ ghpNrhjpAq;fs;.<br>⌖ cq;fs; fhy;fs; ,utpy; Fsph;r;rpahf ,Ue;jhy; fhYiwia mzpAq;fs;.<br>⌖ Fsph;fhyj;jpy; cs;Siwfs; nfhz;l fhyzpfis mzptjhy; fhy;fis #lhf itf;fyhk;.<br>**cq;fs; fhy;fSf;F rhpahd ,uj;j Xl;lj;ijr; nrYj;Jq;fs;:**<br>⇨ ePq;fs; cl;fhUk; NghJ cq;fs; fhy;fis rw;W caukhf itf;fTk;.<br>⇨ Ie;J epkplq;fSf;F ,uz;L my;yJ %d;W Kiw cq;fs; ghj tpuy;fis mirAq;fs;.<br>⇨ cq;fs; ghjj;ij NkYk;> fPOkhf efh;j;Jq;fs;. ,jdhy; cq;fs; fhYf;F ,uj;j Xl;lk; mjpfkhFk;. fZf;fhiy efh;j;Jtjd; %yk; ,uj;j Xl;lk; mjpfhpf;Fk;.<br>⇨ cq;fs; fhy;fis mjpf Neuj;jpw;F xd;wd; Nky; xd;whf itg;gijj; jtph;f;fTk;.<br>**RWRWg;ghd clw;gapw;rp:** | |

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| | | 🕐 cq;fs; kUj;Jthplk; clw;gapw;rpg; gw;wp MNyhrpAq;fs;. nkJthf elg;gjh> tpiuthf elg;gjh> ePr;ryh> eldkh> kpjptz;b Xl;Ltjh vd;W ,itnay;yhk; fhYf;F kpfTk; ey;y gapw;rpfs;.<br>🕐 jpdKk; clw;gapw;rpr; nra;tJ vYk;G> %l;Lj; jirehh;fSf;Fk; ey;y MNuhf;fpaj;ijj; jUfpwJ.<br>🕐 cq;fs; fhy;fSf;F mjpf msT ,uj;j Xl;lk; nry;Yk; NghJ rh;f;fiu msT rhpahf ,Uf;fpwJ.<br>🕐 eilg;gapw;rp jpdKk; nra;tJ ey;yJ. ghjg;gapw;rp ,uz;L ehSf;F xUKiwr; nra;tJ fhYf;F ,uj;j Xl;lj;ij mjpfg;gLj;JfpwJ.<br>🕐 Rj;jkhd RUf;Ffs; ,y;yhj fhyzpfis clw;gapw;rpapd; gpd;dhy; mzpAq;fs;.<br>🕐 cq;fs; fhypw;F fLikahf ,Uf;Fk; Fjpj;jy;> XLjy; eltbf;iffisj; jtph;f;fTk;.<br>🕐 cq;fs; fhy;fis xd;wpd; Nky; xd;W mjpf Neuj;jpw;Fg; NghLtijj; jtph;f;fTk;.<br><br>**fhypw;F ,Uf;Fk; jilfis ePf;Fq;fs;:**<br>❋ cq;fs; gazq;fspd; NghJ fhy;fspd; Nky; nghUl;fs; itg;gijj; jtph;f;fTk;.<br>❋ ,Ul;lhd ,lq;fspy; elg;gijj; jtph;f;fTk;.<br>❋ ghjg;guhkhpg;G Kiwfs; %yk; fhy;fs; mfw;Wtijj; jtph;f;fTk;.<br>**fhy; efq;fis ntl;Ljy;:**<br>✦ cq;fs; fhy;fisf; fOfpag; gpwF efk; ntl;bahy; ftdkhf efj;ij ntl;lTk;. | |

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| | | ✦ fhy; efq;fis neUf;fkhf ntl;Ltijj; jtph;f;fTk;.<br>✦ fhy; efq;fis Neuhf ntl;lTk;.<br>✦ $h;ikahd efq;fis xU nkd;ikahd J}hpif %yk; ePf;fTk;.<br>✦ cq;fs; fhy; efq;fs; kpfTk; jbkdhfNth my;yJ kQ;rs;> fWg;G epwkhfNth xOq;fhf cUtkpy;yhky; ,Ue;jhy; fhy; guhkhpg;G kUj;Jtiu mZfTk;.<br>✦ Fspayiwfspy; ,Ue;J efq;fis ntl;l Ntz;lhk;. ntspr;rkhd rThpakhd ,lq;fisj; Njh;Tr; nra;aTk;.<br>✦ ntl;Lf;fhaq;fSf;F tPl;bNy rpfpl;ir vLf;f Ntz;lhk;.<br>✦ Kfr;rtuf; fj;jpahy; efq;fisNah> jbkdhd NjhiyNah> MzpiaNah ntl;l Ntz;lhk;. NkYk; jbkdhdj; Njhiy tPl;bypUe;J ntl;l Ntz;lhk;. ,jdhy; mbj;Njhy; Nrjg;gLk;.<br><br>**cq;fs; rh;f;fiu Neha; guhkhpg;G:**<br>➢ Fiwthd msT khTr;rj;J czT.<br>➢ rhpahd kUe;J Kiw.<br>➢ jtwhky; ,uj;jj;jpy; rh;f;fiu msit ghpNrhjpg;gJ.<br>➢ clw;gapw;rp cq;fs; kUj;JtUld; njhlh; guhkhpg;G kw;Wk; ghpNrhjid.<br>➢ ghjg;guhkhpg;ghshplk; MW khjj;jpw;F xUKiw fhy;fis | |

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| | | ghpNrhjpg;gJ.<br>**cq;fs; kUj;Jthplk; njhlh;G:**<br>❖ xU tUlj;jpw;F xUKiwahtJ ghjg; guhkhpg;ghshplk; nrd;W fhYzh;T kw;Wk; ehbj;Jbg;G Nghd;W fhy; ghpNrhjidfisr; rhpg;ghh;j;Jf; nfhs;sTk;.<br>❖ ,J cq;fs; fhy;fspy; jPtpug; gpur;rid ,Ue;jhy; cldbahf fhy; guhkhpg;G kUj;Jtiu mZfTk;.<br>**fhy; Cdk; jLf;f xU ghjg;guhkhpg;Gf; Fwpg;Gfs; Gifg;gpbj;jy;:**<br>o Gifg;gpbf;ff; $lhJ. mJ cq;fs; fhy;fisAk;> rpwpa ,uj;jk; toq;Fk; jkdpfisAk; Nrjg;gLj;JfpwJ. ,jdhy; ,uj;j Xl;lk; fhypw;F FiwfpwJ.<br>o Fiwe;j ,uj;j Xl;lk; ghjf;fpUkp jhf;Fjy; Neha;fSf;F fhuzkhapUf;fpwJ. NkYk; fhaq;fs; MWtjw;Fk; jhkjkhfpwJ.<br>o kJ mUe;Jtijj; jtph;f;f Ntz;Lk;.<br>**fhy; rpf;fy;fspdhy; tUk; vr;rhpf;if mwpFwpfs;:**<br>❋ fhy; Njhy; epwk; khWgLk;.<br>❋ Njhy; ntg;gepiy mjpfhpf;Fk;.<br>❋ fhy; gFjpapy; tPf;fk; Vw;gLk;.<br>❋ fhy;fspy; Gz;fs; ntspg;gilahf ,Ue;jhy; nkJthfj; jhd; jPUk;.<br>❋ fhy; efq;fs; rhpahf tsuhJ. | |

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| | | ❋ fhypy; G+Q;irfs; fpUkpfs; jhf;fk; mjpfkhf ,Uf;Fk;.<br>❋ fhy; MzpfspypUe;J ,uj;jk; tbAk;.<br>❋ fhy; Njhy; fl;bahf tsUk;.<br>❋ ghjj;ijr; Rw;wp Njhy; ntbj;J gpsT Vw;gLk;.<br>**fhypy; cs;s ehbj;Jbg;ig mwpAk; topKiwfs;**<br>**Gwq;fhy; jkdp:**<br>cq;fs; if tpuy;fis fZf;fhy;fspd; rw;W Kd;Gwkhf itj;J gf;fthl;bNy efh;j;jpf; nfhz;L tUk; NghJ ehbj;Jbg;ig ghpNrhjpf;fyhk;.<br>**gpd;gf;f bgpay; jkdp:**<br>fZf;fhYf;F gpd;gFjpapy; fhy; rw;W efh;j;jpf; nfhz;L tUk; NghJ bgpay; ehbj;Jbg;ig mwpayhk;.<br>**“rh;f;fiu Neha; guhkhpf;ff; $baJ>**<br>**rh;f;fiu Neha; Gz; tuhky; jLg;Nghk;”** | |

## APPENDIX- 9

LETTER FOR ENGLISH EDITING

From

M.Kalaiarasan

Assistant Professor of English

Rathnavel Subramaniam College of Arts and Science

Sulur – Coimbatore – 641402.

To

The Principal

RVS College of Nursing

Sulur

Dear Madam,

This is to certify that I have edited and corrected the thesis given to me by Mr. V. Anilvince, II year M.Sc. Nursing student. The corrected copy is handed to the said student accordingly.

Thanking you,

09.02.2015

Sulur

Your's sincerely,

DEPARTMENT OF ENGLISH Sulur Coimbatore 641 402 (RVSCAS - AUTONOMOUS)

LETTRE FOR TAMIL EDITING

From

Dr. S.Rajesh Ph.D,
Head of Tamil Department ,
St. Jeromes College of Arts and Science,
Nagercoil, Kanyakumari dist.
Tamilnadu.

To

The Principal
RV.S. College of Nursing
Sulur, Coimbatore.

Respected Madam

This is to certify that I have edited and corrected the Tamil lesson plan and the research tool given to me by Mr. V.Anilvince, II year M.sc. Nursing student. The corrected copy is handed to the said student accordingly.

Nagercoil,
02/09/2014

yours sincerely
S. Rajesh
2/9/14

Thank you

Dr. S. RAJESH, M.A., M.Phil., Ph.D.,
Head of the Dept. in Tamil
St. Jeromes College,
A.N. Kudy, Nagercoil-629 201.
Kanyakumari Dist.

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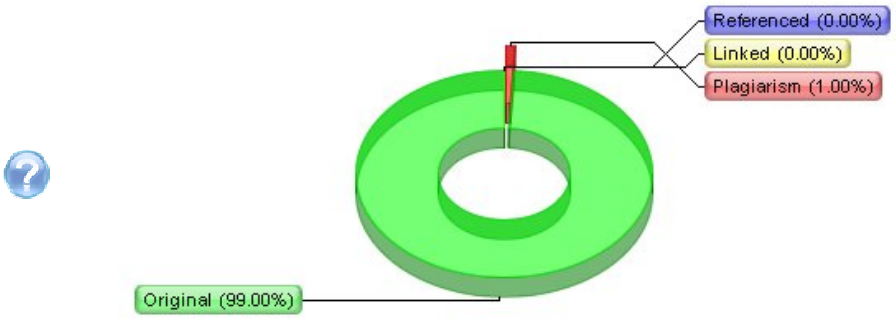


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The above pictures shows the investigator providing foot care instruction to the diabetic patients.